The Economic Impact Of Travel on Massachusetts Counties 2015

A Study Prepared for the
Massachusetts Office of Travel and Tourism
By the Research Department of the
U.S. Travel Association
Washington, D.C.
September 2016

PREFACE

This study was conducted by the research department of the U.S. Travel Association for the *Massachusetts Office of Travel and Tourism*. The study presents estimates of travel economic impact on Massachusetts in 2015 at the state and county levels. Estimates include travel expenditures, travel-generated employment and payroll income, as well as tax revenues for state and local governments. Direct domestic travel impacts are provided for the state and the 14 counties, while the international travelers' impact and the multiplier impact on Massachusetts are provided at the state level only. For the purpose of comparison, historical impact data are displayed in this report.

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INTRODUCTION

The study presents estimates of travel's economic impact on Massachusetts in 2015 at the state and county levels. Estimates include travel expenditures, travel-generated employment and payroll income, as well as tax revenues for state and local governments. Direct domestic travel impacts are provided for the state and the 14 counties. Additionally, international travelers' impact and the multiplier impact on Massachusetts are provided at the state level only. For the purpose of comparison, historical impact data is displayed in this report.

All estimates of the economic impact of travel contained in this report are the product of the U.S. Travel Association's Travel Economic Impact Model (TEIM), a proprietary economic model developed expressly to indicate the expenditures, employment, payroll and tax revenue generated by travel away from home in the United States.

TEIM was created to capture the highly complex nature of the U.S. travel industry at national, regional, state and local levels. The TEIM was designed so that economic impact estimates could be compared across all 50 states and the District of Columbia, thereby allowing states and localities to assess their market share nationally, regionally or within the state.

The domestic component of TEIM is based on national surveys conducted by U.S. Travel and other travel-related data developed by U.S. Travel, various government agencies and well-known travel organizations each year. A summary of the methodology is provided in Appendix A.

The international travel expenditure estimates are based on the Office of Travel and Tourism Industries' (OTTI) Survey of International Air Travelers to the U.S. and data provided to OTTI from Canada and Mexico. Other estimates of the economic impact of international visitors to the U.S. are generated through TEIM by incorporating the estimated international travelers' expenditures with the data series utilized to produce the domestic estimates.

U.S. residents traveling in Massachusetts includes both state residents and out-of-state visitors traveling away from home overnight in paid accommodations, or on day or overnight trips to places 50 miles or more away from home. Travel commuting to and from work; travel by those operating an airplane, bus, truck, train or other forms of common carrier transportation; military travel on active duty; and travel by students away at school are all excluded from this model. In addition, the payroll and employment estimates represent impact generated in the private sector and exclude government payroll and employment.

Since additional data relating to travel and its economic impact in 2015 will become available subsequent to this study, U.S. Travel reserves the right to revise these estimates in the future.

EXECUTIVE SUMMARY

Total Impact of Travel

- In 2015, total domestic and international travel output in Massachusetts, including direct, indirect and induced output, amounted to $32.0 billion, up 3.7 percent from 2014.

- Domestic and international travel supported a total of 216,900 jobs for the travel industry and other industry sectors in Massachusetts during 2015, a 2.2 percent increase from 2014.

- Employees supported directly and indirectly by travel in Massachusetts earned a total of $8.4 billion in 2015, up 6.7 percent from 2014.

Direct Impact of Travel

- Domestic and international travelers directly spent $20.2 billion in Massachusetts during 2015, up 3.8 percent from 2014. Domestic traveler spending increased 3.8 percent, while international traveler spending increased 3.6 percent.

- Payroll income generated by direct traveler spending in Massachusetts totaled $4.4 billion during 2015, up 7.2 percent from 2014.

- Travel expenditures directly supported 135,000 jobs within Massachusetts in 2015, up 2.3 percent from 2014. Travel-generated jobs in Massachusetts comprised 3.9 percent of the total nonfarm employment in the state during 2015.

- On average, every $149,909 spent in Massachusetts by domestic and international travelers generated one job in 2015.

- Traveler spending in Massachusetts directly generated $3.0 billion in tax revenue for federal, state and local governments in 2015, up 6.6 percent from 2014.

- Suffolk County, which includes the city of Boston, received $8.6 billion in domestic travel expenditures, leading Massachusetts counties for 2015.

NATIONAL SUMMARY 2015

The U.S. economy on the whole performed relatively well in 2015, with real Gross Domestic Product (GDP) growing 2.6 percent from 2014. Matching the previous year's growth, the U.S. economy outpaced most other advanced economies in 2015.

The first three quarters of 2015 were characterized by solid economic growth. In the first quarter, a 2.0 percent annualized increase in real GDP reflected strong gains in business investment and inventory along with moderate consumer spending. These gains were balanced out by decreased trade, amidst the global headwinds of a strong dollar and the temporary west coast port shutdown.

In the second quarter, a 2.6 percent annualized increase in real GDP was encouraging, but masked a shift in the economy away from business investment and inventory spending. Trade and personal consumption increased their contribution to real GDP growth, but business investment slowed down considerably and inventories were not drawn down enough to warrant more investment, creating a drag on the economy.

This drag continued into the third quarter: 2.0 percent annualized growth in real GDP reflected continued slow-downs in business investment, especially in structures and inventory. In fact, despite a robust quarter of consumer spending (2.7 percent annualized), inventories were drawn down by a lesser amount than in previous quarters, prompting less incentive for businesses to improve inventory investment. Finally, in the fourth quarter, a consumer spending slowdown added more downward pressure on the economy; continued sluggishness from business investment and inventories dragged the economy down to 0.9 percent growth.

Global headwinds of low oil prices and a strong dollar continued to force a startling disconnect in the U.S. economy in 2016. Consumer spending increased, especially in the second quarter (6.2 percent annualized). However, this contribution was counterbalanced by substantial decreases in business investment and inventories (business investment, for instance, was down 9.7 percent annualized in the second quarter). The result was a very slow first half of 2016 for the economy: 0.8 percent annualized real GDP growth in the first quarter and 1.2 percent in the second quarter. While inventories may draw down enough with robust consumer spending numbers, it remains to be seen whether continued uncertainty will affect future business investment.

The U.S. employment situation continued to improve in 2015: nonfarm employment increased by 2.7 million jobs from December 2014 to 143.4 million jobs in December 2015. During the same period, the travel industry directly added 102,000 jobs, reaching 8.2 million in December 2015. Total personal income for 2015 also grew a solid 4.4 percent. Both indicators have seen steady gains coming into the first three months of 2016, with disposable income reaching high monthly gains for January and March of 0.4 percent per month.

Consumer inflation was mild in 2015. The overall CPI edged up just 0.1 percent and, excluding food and energy prices which tend to be more volatile, core CPI edged up 1.8 percent compared to 2014. The U.S. Travel Association's TPI, however, decreased sharply by 2.7 percent over the same period. Since spending on gasoline is one of the most important components of travelers'

expenditures, especially for auto travel, decreases in motor fuel prices during 2015 were a primary reason the TPI grew at a slower rate than CPI.

Table 1: Overall U.S. Economic Indicators, 2013-2015

Sector	2013	2014	2015
Nominal gross domestic product ($Billions)	16,691.5	17,393.1	18,036.6
Real gross domestic product ($Billions)*	15,612.2	15,982.3	16,397.2
Real disposable personal income ($Billions)*	11,527.6	11,931.0	12,343.3
Real personal consumption expenditures ($Billions)*	10,565.4	10,868.9	11,214.7
Consumer Price Index**	233.0	236.7	237.0
Travel Price Index	275.6	279.6	272.4
Nonfarm payroll employment (Millions)	136.4	139.0	141.9
Unemployment rate (%)	7.4	6.2	5.3
Percentage change from previous year			
Nominal gross domestic product	3.3%	4.2%	3.7%
Real gross domestic product	1.7%	2.4%	2.6%
Real disposable personal income	-1.4%	3.5%	3.5%
Real personal consumption expenditures	1.5%	2.9%	3.2%
Consumer Price Index	1.5%	1.6%	0.1%
Travel Price Index	0.9%	1.5%	-2.6%
Nonfarm payroll employment	1.6%	1.9%	2.1%

Source: BEA, BLS, U.S. Travel Association
** In chained 2009 dollars*
*** 1982-84=100*

U.S. Travel Volume in 2015

Helped by a significant decline in gasoline prices, U.S. domestic travel, including leisure and business travel, increased notably by 3.3 percent to a total of 2.2 billion person-trips in 2015. A person-trip is defined as one person on a trip away from home overnight in paid accommodations, or on a day or overnight trip to places 50 miles or more, one-way, away from home.

Domestic leisure travel, which includes visits to friends and relatives as well as trips taken for outdoor recreation and entertainment purposes, increased 3.6 percent in 2015 to 1.7 billion person-trips and is forecasted to increase 2.1 percent in 2016. Leisure travel accounted for 78.9 percent of all U.S. domestic travel in 2015. Domestic business travel grew 1.9 percent in 2015 to 459.4 million person-trips and is expected to increase 0.6 percent in 2016.

International inbound travelers, including overnight visitors from Canada, Mexico and overseas, made 77.5 million visits[1] to the United States in 2015. Overseas visitor arrivals to the U.S. (from all countries except Canada and Mexico) reached 38.4 million in 2015 and accounted for half of

total international arrivals to the United States, according to U.S. Department of Commerce. Canadian overnight arrivals to the U.S are estimated to have decreased from 23 million in 2014 to 21 million in 2015, while Mexican overnight arrivals are estimated to have increased from 17 million in 2014 to 18 million in 2015.

Travel Expenditures in 2015

Total domestic and international travelers spending in the U.S. increased 2.1 percent, growing from $928 billion in 2014 to $947 billion in 2015, not adjusted for inflation (excluding international airfare payments to the U.S airlines). After a slight lull, the U.S. Travel Association expects total domestic and international traveler expenditures to pick up to 2.7 percent growth in 2016.

Domestic travel expenditures grew 2.7 percent from 2014 to $814 billion in 2015. International travelers, on the other hand, spent $133 billion in the U.S. in 2015, a decrease of 2.0 percent[2] from 2014. It should be noted here that this traveler spending excludes international airfare payments to U.S. airlines, as well as international visitors' expenses on education, health care and expenditures by cross-border day-trip visitors and seasonal workers. International traveler spending is expected to bounce back in 2016, increasing 2.5 percent from 2015.

International airfare receipts are total passenger fares paid by international residents on U.S. flag air carriers. In 2015, international airfare receipts totaled $42 billion, down 5.3 percent from 2014. In the first six months of 2016, international airfare receipts decreased 6.2 against the first quarter of 2015.

Leisure traveler spending totaled $651 billion in 2015, a 0.9 percent increase from 2014, accounting for 68.7 percent of all traveler expenditures. Business traveler spending increased 4.7 percent over 2014 to $296 billion in 2015, 31.3 percent of all traveler expenditures.

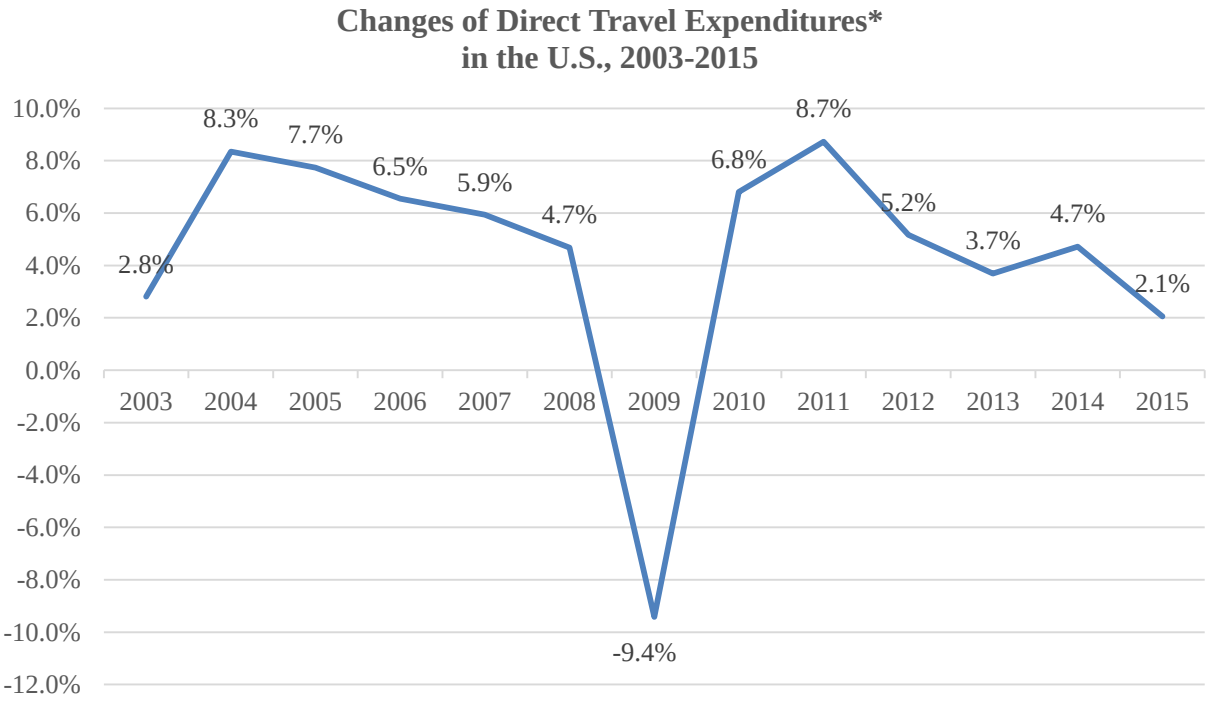
[1] This number does not match the total number of international visitations published by the Department of Commerce. Published estimates from the Department of Commerce for 2014 and 2015 are not comparable to each other or previous years because (1) in 2014, additional 1+ night visitations were included due to a technical-processing change; (2) in 2015, the published numbers reflect the availability of additional electronic records.

[2] Reflects Department of Commerce data issued in June and does not include any revisions made in July.

Table 2: Travel Expenditures - U.S. Nationwide

Category	2014 Spending ($Billions) Domestic	Intl.*	Total	2015 Spending ($Billions) Domestic	Intl.*	Total
Public Transportation	$160.6	$15.0	$175.6	$162.9	$14.9	$177.8
Auto Transportation	161.2	1.6	162.8	148.0	1.6	149.6
Lodging	142.1	39.5	181.6	154.9	39.9	194.8
Foodservice	191.5	28.9	220.4	206.9	28.4	235.4
Entertainment & Recreation	82.2	10.6	92.7	83.8	10.6	94.5
General Retail Trade	54.8	40.1	94.9	57.5	37.5	95.0
Total	**$792.4**	**$135.7**	**$928.1**	**$814.1**	**$133.0**	**$947.1**

Source: U.S. Travel Association
** Excludes international passenger fare payments.*



Source: U.S. Travel Association.
**Excludes international passenger fare payments.*

Travel Employment in 2015

The year 2015 continued the banner jobs recovery seen in the years following the Great Recession. After bottoming out in February 2010, the nonfarm payroll employee count, as measured by the Bureau of Labor Statistics (BLS), made a full recovery from the Great Recession in May 2014, surpassing the pre-recession jobs peak of nearly 138.4 million jobs in January 2008. The positive momentum continued: after adding three million jobs during the 12 months of 2014, the economy added another 2.7 million in 2015 to reach 143.1 million by December.

After peaking at 9.6 percent in 2010, the unemployment rate fell to an average monthly rate of 5.3 percent in 2015, starting at 5.7 percent in January and ending at 5.0 percent in December. The unemployment rate fell to 4.9 percent in January and February 2016, but returned to 5.0 percent in April, still above the 4.4 percent pre-recession low.

American service industries, of which the travel industry is a part, played a major role in the jobs recovery, accounting for 84.1 percent of the jobs recovered from 2010-2015. The travel industry joined healthcare, administrative services, accommodation and foodservices and retail trade, as one of the leading growth industries in terms of overall jobs created from 2010 to 2015. Travel accounted for 6.8 percent of nonfarm jobs created from 2010 to 2015, despite holding a 5.8 percent share of all nonfarm jobs in 2015.

In 2015, traveler spending directly supported over 8.2 million U.S. jobs, including both full-time and seasonal/part-time positions, up 1.9 percent from 2014. This job increase constituted 5.2 percent of total nonfarm job growth since 2014.

These 8.2 million travel-generated jobs constituted 5.8 percent of total nonfarm employment in the U.S. in 2015. Without these jobs, the 2015 national unemployment rate of 5.3 percent would have nearly doubled to 10.5 percent, an increase of 5.2 percentage points.

The travel industry remained a strong creator of jobs despite the Great Recession, passing its own pre-recession peak (7.7 million in 2008) in 2014. Between 2005 and 2015, total nonfarm employment in the U.S. increased 5.8 percent while travel-generated employment increased 8.6 percent. Focusing on the post-recession recovery, travel-generated employment increased 10.7 percent from 2010 to 2015, whereas total nonfarm employment increased 8.8 percent from the same years.

Table 3: Travel-Generated Employment - U.S. Nationwide

	2014 Employment (Thousands)			2015 Employment (Thousands)		
Category	Domestic	Intl.*	Total	Domestic	Intl.*	Total
Public Transportation	891.2	64.3	955.6	923.2	65.1	988.2
Auto Transportation	273.4	2.0	275.4	279.8	2.0	281.8
Lodging	1,245.6	255.2	1,500.8	1,276.3	243.7	1,520.0
Foodservice	2,804.9	417.7	3,222.6	2,907.9	396.8	3,304.7
Entertainment & Recreation	1,161.6	225.2	1,386.8	1,174.8	225.1	1,399.9
General Retail Trade	336.7	164.3	500.9	341.6	151.7	493.4
Travel Planning	165.4	0.0	165.4	169.4	0.0	169.4
Total	**6,878.8**	**1,128.7**	**8,007.4**	**7,073.0**	**1,084.4**	**8,157.4**

Source: U.S. Travel Association
** Excludes jobs supported by international passenger fare payments.*

Table 4: U.S. Travel Forecasts

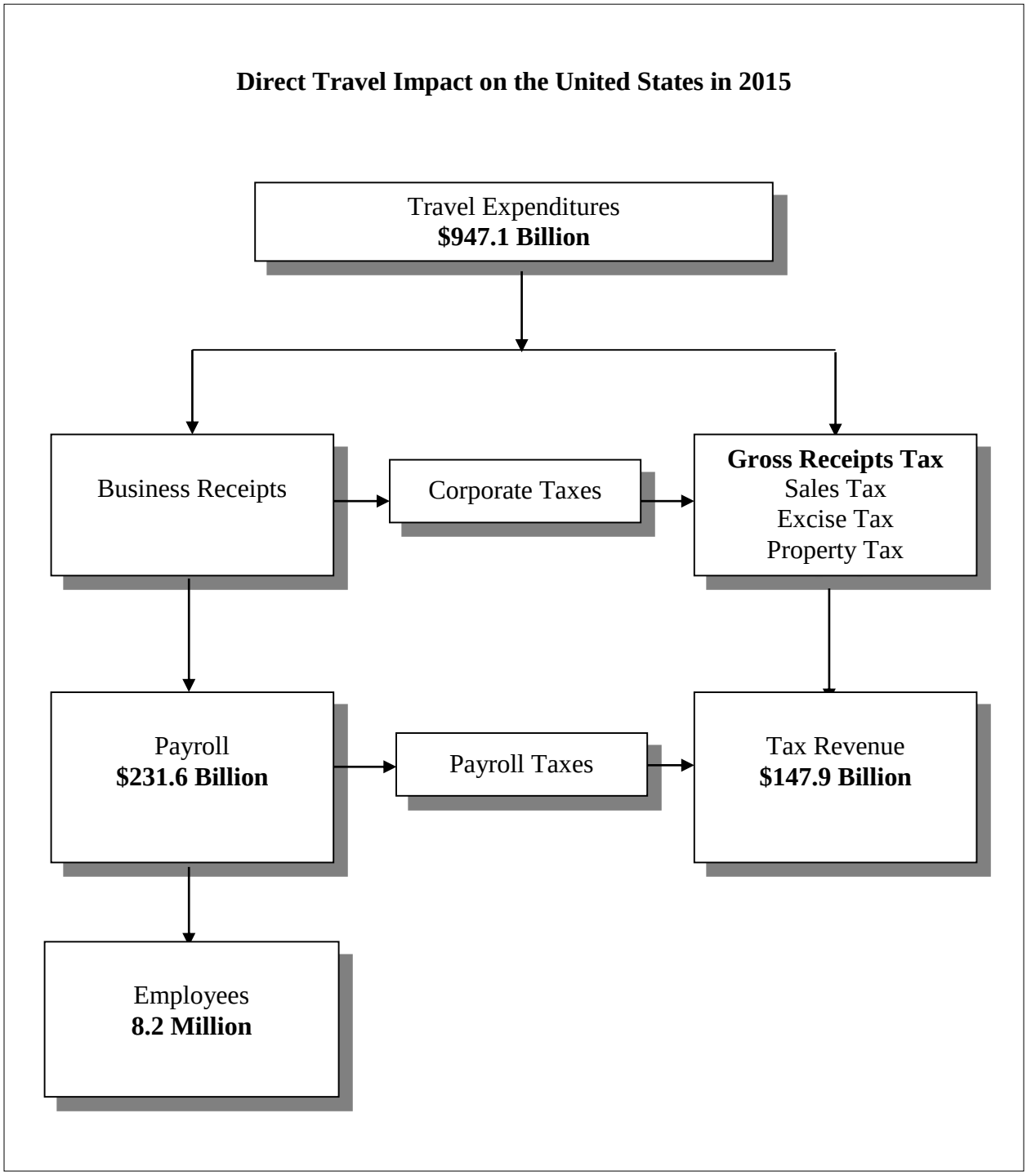
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Real GDP ($Billions)	14,418.7	14,783.8	15,020.6	15,354.6	15,612.2	15,982.3	16,397.2	18,500.8	19,331.9	20,253.2
Unemployment Rate (%)	9.3	9.6	8.9	8.1	7.4	7.4	5.3	4.9	4.6	4.7
Consumer Price Index*	214.5	218.1	224.9	229.6	233.0	236.7	237.1	240.0	245.2	250.4
Travel Price Index	241.5	250.7	266.9	273.0	275.6	279.6	272.4	275.1	283.7	293.3
Total Travel Expenditures in U.S. ($Billions)	699.8	747.4	812.7	854.7	886.2	928.1	947.1	973.0	1,003.1	1,045.6
U.S. Residents	609.1	640.6	694.0	728.0	751.2	792.4	814.1	836.7	860.5	893.4
International Visitors**	90.7	106.9	118.6	126.7	135.0	135.7	133.0	136.3	142.6	152.1
Total International Visitors to the U.S. (Millions)	55.1	60.0	62.8	66.7	70.0	74.8	77.5	79.1	81.7	85.4
Overseas Arrivals to the U.S. (Millions)	23.8	26.4	27.9	29.8	32.0	34.4	38.4	39.9	41.3	43.7
Total Domestic Person-Trips (Millions)	1,900.1	1,963.7	1,997.5	2,030.3	2,059.6	2,109.3	2,178.2	2,217.1	2,249.7	2,287.5
Business	434.3	446.4	440.7	439.4	444.9	451.0	459.4	462.2	466.1	471.7
Leisure	1,465.8	1,517.3	1,556.8	1,590.9	1,614.7	1,658.3	1,718.8	1,754.9	1,783.6	1,815.8
Percent Change from Previous Year (%)										
Real GDP	-2.8	2.5	1.6	2.2	1.7	2.4	2.6	2.0	2.4	2.3
Consumer Price Index*	-0.4	1.6	3.2	2.1	1.5	1.6	0.1	1.2	2.2	2.1
Travel Price Index	-6.3	3.8	6.5	2.3	0.9	1.5	-2.6	1.0	3.1	3.4
Total Travel Expenditures in U.S.	-9.4	6.8	8.7	5.2	3.7	4.7	2.1	2.7	3.1	4.2
U.S. Residents	-8.8	5.2	8.3	4.9	3.2	5.5	2.7	2.8	2.8	3.8
International Visitors**	-13.3	17.8	11.0	6.8	6.5	0.5	-2.0	2.5	4.6	6.7
Total International Visitors to the U.S.	-5.2	8.9	4.7	6.1	5.0	NA[a]	NA[b]	2.1	3.2	4.5
Overseas Arrivals to the U.S.	-6.3	11.0	5.8	6.7	7.7	NA[a]	NA[b]	3.9	3.6	5.7
Total Domestic Person-Trips	-3.3	3.3	1.7	1.6	1.4	2.4	3.3	1.8	1.5	1.7
Business	-5.8	2.8	-1.3	-0.3	1.3	1.4	1.9	0.6	0.9	1.2
Leisure	-2.5	3.5	2.6	2.2	1.5	2.7	3.6	2.1	1.6	1.8

Sources: U.S. Travel Association

**1982-84=100. ** International traveler spending does not include international passenger fares.*

[a] According to the National Travel and Tourism Office, the completion of the I-94 automation project now provides a more accurate determination of how many nights were spent in the United States which makes it possible to be more inclusive of one-night stays (travelers from overseas countries) given that the arrival-departure record match is now more complete and accurate. With the inclusion of one-night stay travelers in 2014, arrivals data from overseas countries in 2013 and 2014 are basically not comparable.

[b] 2015 changes reflect a combination of additional records counted and market condition. As such, 2015 data is not comparable to earlier years.



Source: U.S. Travel Association, BEA
**Does not include international passenger fare payments and other economic impact generated by these payments.*

TRAVEL IMPACT ON MASSACHUSETTS - 2015

TRAVEL IMPACT ON MASSACHUSETTS - 2015

Travel Expenditures

Domestic and international travelers in Massachusetts directly spent $20.2 billion on transportation, lodging, food, entertainment and recreation, and retail shopping during 2015, representing an increase of 3.8 percent from 2014. Domestic travelers spent $17.5 billion, while international travelers spent $2.7 billion, up 3.8 percent and 3.6 percent, respectively, from 2014.

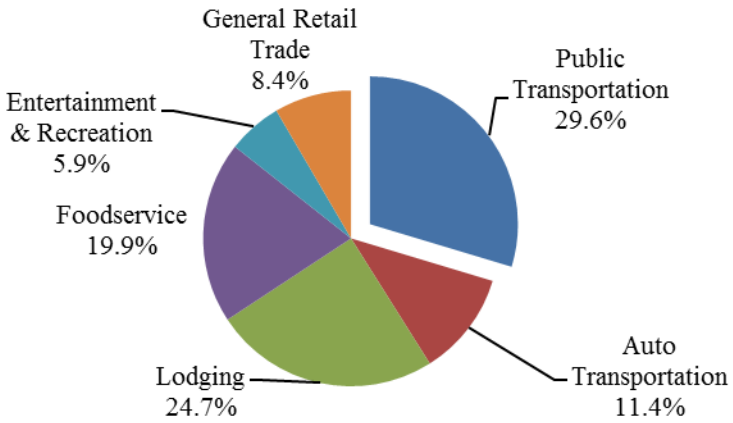
In 2015, domestic and international travelers spent $6.0 billion on public transportation, up 2.4 percent from 2014.

Domestic and international travelers spent $5.0 billion on lodging during 2015, an increase of 9.3 percent from 2014. According to Smith Travel Research, hotel room demand increased by 3.3 percent in 2015, while the average daily room rate increased by 5.9 percent.

Spending on foodservice by domestic and international travelers totaled $4.0 billion, up 6.3 percent from 2014.

Domestic and international travel spending on auto transportation decreased by 5.3 percent in 2015 to $2.3 billion.

Travel Spending in Massachusetts in 2015 by Industry Sector



1. Auto transportation sector includes privately-owned vehicles that are used for trips (e.g., automobiles, trucks, campers or other recreational vehicles), gasoline service stations, and automotive rental.
2. Foodservice sector includes restaurants, grocery stores and other eating and drinking establishments.
3. Public transportation sector comprises air, intercity bus, rail, boat or ship, and taxicab or limousine service.
4. Lodging sector consists of hotels and motels, campgrounds, and ownership or rental of vacation or second homes.
5. General retail trade sector includes gifts, clothes, souvenirs and other incidental retail purchases.
6. Entertainment and recreation sector includes amusement parks and attractions, attendance at nightclubs, movies, legitimate shows, sports events, and other forms of entertainment and recreation while traveling.

Table 5: Direct Travel Expenditures in Massachusetts by Industry Sector, 2014-2015

2015 Expenditures	Domestic ($Millions)	International ($Millions)	Total ($Millions)	% of Total
Public Transportation	$5,693.7	$305.3	$5,999.0	29.6%
Auto Transportation	2,271.2	37.7	2,309.0	11.4%
Lodging	3,934.2	1,059.4	4,993.7	24.7%
Foodservice	3,495.1	529.4	4,024.6	19.9%
Entertainment & Recreation	991.8	210.5	1,202.3	5.9%
General Retail Trade	1,098.7	606.1	1,704.8	8.4%
Total	$17,484.7	$2,748.5	$20,233.3	100.0%
2014 Expenditures				
Public Transportation	$5,544.7	$312.2	$5,856.9	30.0%
Auto Transportation	2,401.7	37.2	2,438.9	12.5%
Lodging	3,601.7	967.7	4,569.3	23.4%
Foodservice	3,288.9	495.4	3,784.3	19.4%
Entertainment & Recreation	964.1	205.1	1,169.2	6.0%
General Retail Trade	1,045.3	636.7	1,682.0	8.6%
Total	$16,846.4	$2,654.3	$19,500.7	100.0%

Percentage change 2015 over 2014	Domestic (%)	International (%)	Total (%)
Public Transportation	2.7%	-2.2%	2.4%
Auto Transportation	-5.4%	1.5%	-5.3%
Lodging	9.2%	9.5%	9.3%
Foodservice	6.3%	6.9%	6.3%
Entertainment & Recreation	2.9%	2.7%	2.8%
General Retail Trade	5.1%	-4.8%	1.4%
Total	3.8%	3.6%	3.8%

Source: U.S. Travel Association

Table 6: Direct Travel Expenditures in Massachusetts by Industry Sector, 2011-2015
(Expenditures $ Millions)

	2011	2011	2011	2012	2012	2012	2013	2013	2013	2014	2014	2014	2015	2015	2015
Expenditures	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Transportation	4,744.7	287.7	5,032.4	5,008.1	285.9	5,293.9	5,263.6	300.2	5,563.7	5,544.7	312.2	5,856.9	5,693.7	305.3	5,999.0
Auto Transportation	2,240.7	34.6	2,275.3	2,329.8	34.3	2,364.1	2,364.8	35.4	2,400.2	2,401.7	37.2	2,438.9	2,271.2	37.7	2,309.0
Lodging	2,920.0	775.7	3,695.6	3,165.4	812.1	3,977.5	3,327.8	866.3	4,194.1	3,601.7	967.7	4,569.3	3,934.2	1,059.4	4,993.7
Foodservice	2,906.1	439.0	3,345.0	3,031.4	442.2	3,473.6	3,135.0	462.8	3,597.7	3,288.9	495.4	3,784.3	3,495.1	529.4	4,024.6
Entertainment & Rec.	869.2	185.4	1,054.7	897.4	186.9	1,084.4	924.6	194.3	1,118.9	964.1	205.1	1,169.2	991.8	210.5	1,202.3
General Retail Trade	939.1	571.7	1,510.8	973.7	572.4	1,546.2	1,008.3	598.8	1,607.1	1,045.3	636.7	1,682.0	1,098.7	606.1	1,704.8
Total	14,619.8	2,294.0	16,913.8	15,405.8	2,333.8	17,739.6	16,024.1	2,457.7	18,481.8	16,846.4	2,654.3	19,500.7	17,484.7	2,748.5	20,233.3
% Change*	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Transportation	9.8%	13.4%	10.0%	5.6%	-0.6%	5.2%	5.1%	5.0%	5.1%	5.3%	4.0%	5.3%	2.7%	-2.2%	2.4%
Auto Transportation	14.8%	17.4%	14.8%	4.0%	-0.9%	3.9%	1.5%	3.3%	1.5%	1.6%	5.0%	1.6%	-5.4%	1.5%	-5.3%
Lodging	7.0%	12.8%	8.2%	8.4%	4.7%	7.6%	5.1%	6.7%	5.4%	8.2%	11.7%	8.9%	9.2%	9.5%	9.3%
Foodservice	5.7%	11.1%	6.4%	4.3%	0.7%	3.8%	3.4%	4.6%	3.6%	4.9%	7.1%	5.2%	6.3%	6.9%	6.3%
Entertainment & Rec.	5.2%	8.4%	5.8%	3.2%	0.8%	2.8%	3.0%	4.0%	3.2%	4.3%	5.5%	4.5%	2.9%	2.7%	2.8%
General Retail Trade	4.7%	10.3%	6.7%	3.7%	0.1%	2.3%	3.5%	4.6%	3.9%	3.7%	6.3%	4.7%	5.1%	-4.8%	1.4%
Total	8.5%	11.6%	8.9%	5.4%	1.7%	4.9%	4.0%	5.3%	4.2%	5.1%	8.0%	5.5%	3.8%	3.6%	3.8%
% of Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Transportation	32.5%	12.5%	29.8%	32.5%	12.2%	29.8%	32.8%	12.2%	30.1%	32.9%	11.8%	30.0%	32.6%	11.1%	29.6%
Auto Transportation	15.3%	1.5%	13.5%	15.1%	1.5%	13.3%	14.8%	1.4%	13.0%	14.3%	1.4%	12.5%	13.0%	1.4%	11.4%
Lodging	20.0%	33.8%	21.8%	20.5%	34.8%	22.4%	20.8%	35.2%	22.7%	21.4%	36.5%	23.4%	22.5%	38.5%	24.7%
Foodservice	19.9%	19.1%	19.8%	19.7%	18.9%	19.6%	19.6%	18.8%	19.5%	19.5%	18.7%	19.4%	20.0%	19.3%	19.9%
Entertainment & Rec.	5.9%	8.1%	6.2%	5.8%	8.0%	6.1%	5.8%	7.9%	6.1%	5.7%	7.7%	6.0%	5.7%	7.7%	5.9%
General Retail Trade	6.4%	24.9%	8.9%	6.3%	24.5%	8.7%	6.3%	24.4%	8.7%	6.2%	24.0%	8.6%	6.3%	22.1%	8.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: U.S. Travel Association
** Compared with previous year and not adjusted by inflation rate.*

TRAVEL IMPACT ON MASSACHUSETTS – 2015

Travel-Generated Payroll

Travel-generated payroll is the wage and salary income paid to employees directly serving travelers within the industry sectors from which travelers purchase goods and services. One dollar of travel spending generates different amounts of payroll income within the various travel industry sectors, depending on the labor content and the wage structure of each sector.

Payroll income generated by domestic and international travel in Massachusetts increased 7.2 percent from 2014, totaling $4.4 billion in 2015.

Of this total, $3.8 billion in payroll income was directly generated by domestic travelers, a 7.5 percent increase from 2014. International travelers' spending in the state directly generated $609.2 million in payroll income for Massachusetts' travel industry employees, up 5.3 percent from 2014.

On average, every dollar spent by domestic and international travelers produced $0.22 in payroll income for Massachusetts' residents during 2015.

Travel-generated payroll for the public transportation sector showed the most growth among seven sectors investigated, up 10.9 percent from 2014 to $799.7 million. Payroll for the foodservice sector increased 7.3 percent from 2014.

The average payroll income generated by travel in Massachusetts stood at $32,707 in 2015, an increase of 4.8 percent from 2014.

Travel-Generated Payroll in Massachusetts in 2015 by Industry Sector

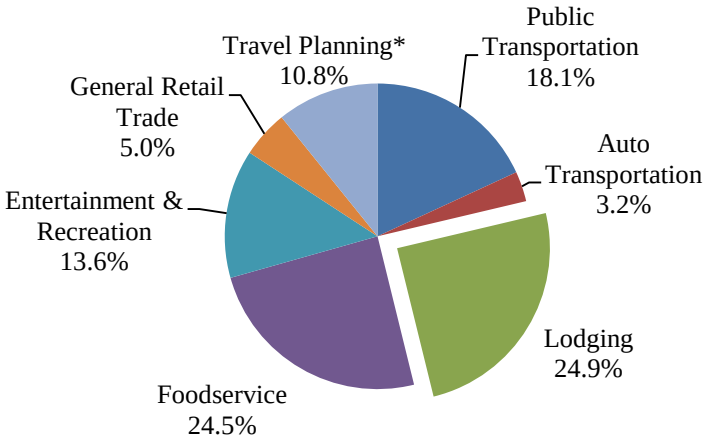


Table 7: Direct Travel-Generated Payroll in Massachusetts by Industry Sector, 2014-2015

2015 Payroll	Domestic ($Millions)	International ($Millions)	Total ($Millions)	% of Total
Public Transportation	$762.7	$37.1	$799.7	18.1%
Auto Transportation	137.9	2.7	140.6	3.2%
Lodging	870.9	226.3	1,097.2	24.9%
Foodservice	933.1	146.6	1,079.7	24.5%
Entertainment & Recreation	491.8	108.6	600.4	13.6%
General Retail Trade	132.3	88.0	220.3	5.0%
Travel Planning *	476.7	0.0	476.7	10.8%
Total	$3,805.3	$609.2	$4,414.5	100.0%
2014 Payroll				
Public Transportation	$686.1	$35.0	$721.1	17.5%
Auto Transportation	133.7	2.4	136.2	3.3%
Lodging	818.6	212.3	1,030.9	25.0%
Foodservice	870.5	136.0	1,006.5	24.4%
Entertainment & Recreation	462.1	102.2	564.3	13.7%
General Retail Trade	123.4	90.6	214.0	5.2%
Travel Planning *	445.8	0.0	445.8	10.8%
Total	$3,540.2	$578.5	$4,118.8	100.0%

Percentage change 2015 over 2014	Domestic (%)	International (%)	Total (%)
Public Transportation	11.2%	5.9%	10.9%
Auto Transportation	3.1%	10.7%	3.2%
Lodging	6.4%	6.6%	6.4%
Foodservice	7.2%	7.8%	7.3%
Entertainment & Recreation	6.4%	6.2%	6.4%
General Retail Trade	7.2%	-2.9%	2.9%
Travel Planning *	6.9%	_	6.9%
Total	7.5%	5.3%	7.2%

Source: U.S. Travel Association

**Refers to payroll income that goes to travel agents, tour operators, and other travel service employees who arrange passenger transportation, lodging, tours and other related services.*

Table 8: Direct Travel Payroll in Massachusetts by Industry Sector, 2011-2015

(Payroll $ Millions)

	2011	2011	2011	2012	2012	2012	2013	2013	2013	2014	2014	2014	2015	2015	2015
Payroll	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	588.9	32.5	621.4	612.5	31.9	644.4	655.4	34.1	689.5	686.1	35.0	721.1	762.7	37.1	799.7
Auto Trans.	126.8	2.3	129.1	128.7	2.2	130.9	134.0	2.3	136.3	133.7	2.4	136.2	137.9	2.7	140.6
Lodging	727.4	184.7	912.0	746.3	187.3	933.6	781.4	198.8	980.2	818.6	212.3	1,030.9	870.9	226.3	1097.2
Foodservice	757.5	118.6	876.2	786.3	118.9	905.2	824.2	126.1	950.3	870.5	136.0	1,006.5	933.1	146.6	1079.7
Entertainment & Rec.	411.6	91.3	503.0	427.1	92.5	519.6	442.6	96.7	539.3	462.1	102.2	564.3	491.8	108.6	600.4
General Retail Trade	117.0	85.8	202.8	117.8	83.5	201.3	120.7	86.4	207.1	123.4	90.6	214.0	132.3	88.0	220.3
Travel Planning	384.5	_	384.5	407.0	_	407.0	425.4	_	425.4	445.8	_	445.8	476.7	_	476.7
Total	3,113.7	515.3	3,629.0	3,225.7	516.4	3,742.0	3,383.6	544.5	3,928.1	3,540.2	578.5	4,118.8	3,805.3	609.2	4,414.5
% Change*	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	6.1%	9.6%	6.2%	4.0%	-2.1%	3.7%	7.0%	6.9%	7.0%	4.7%	2.8%	4.6%	11.2%	5.9%	10.9%
Auto Trans.	3.5%	5.9%	3.5%	1.5%	-3.3%	1.4%	4.1%	5.9%	4.2%	-0.2%	4.6%	-0.1%	3.1%	10.7%	3.2%
Lodging	4.5%	5.6%	4.7%	2.6%	1.5%	2.4%	4.7%	6.1%	5.0%	4.8%	6.8%	5.2%	6.4%	6.6%	6.4%
Foodservice	3.3%	8.6%	4.0%	3.8%	0.2%	3.3%	4.8%	6.1%	5.0%	5.6%	7.8%	5.9%	7.2%	7.8%	7.3%
Entertainment & Rec.	1.8%	4.9%	2.4%	3.8%	1.3%	3.3%	3.6%	4.6%	3.8%	4.4%	5.7%	4.6%	6.4%	6.2%	6.4%
General Retail Trade	1.7%	7.2%	4.0%	0.7%	-2.7%	-0.7%	2.4%	3.5%	2.9%	2.3%	4.9%	3.3%	7.2%	-2.9%	2.9%
Travel Planning	5.0%	_	5.0%	5.8%	_	5.8%	4.5%	_	4.5%	4.8%	_	4.8%	6.9%	_	6.9%
Total	4.0%	6.7%	4.4%	3.6%	0.2%	3.1%	4.9%	5.4%	5.0%	4.6%	6.3%	4.9%	7.5%	5.3%	7.2%
% of Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	18.9%	6.3%	17.1%	19.0%	6.2%	17.2%	19.4%	6.3%	17.6%	19.4%	6.1%	17.5%	20.0%	6.1%	18.1%
Auto Trans.	4.1%	0.4%	3.6%	4.0%	0.4%	3.5%	4.0%	0.4%	3.5%	3.8%	0.4%	3.3%	3.6%	0.4%	3.2%
Lodging	23.4%	35.8%	25.1%	23.1%	36.3%	24.9%	23.1%	36.5%	25.0%	23.1%	36.7%	25.0%	22.9%	37.2%	24.9%
Foodservice	24.3%	23.0%	24.1%	24.4%	23.0%	24.2%	24.4%	23.2%	24.2%	24.6%	23.5%	24.4%	24.5%	24.1%	24.5%
Entertainment & Rec.	13.2%	17.7%	13.9%	13.2%	17.9%	13.9%	13.1%	17.8%	13.7%	13.1%	17.7%	13.7%	12.9%	17.8%	13.6%
General Retail Sales	3.8%	16.7%	5.6%	3.7%	16.2%	5.4%	3.6%	15.9%	5.3%	3.5%	15.7%	5.2%	3.5%	14.4%	5.0%
Travel Planning	12.3%	_	10.6%	12.6%	_	10.9%	12.6%	_	10.8%	12.6%	_	10.8%	12.5%	_	10.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: U.S. Travel Association
** Compared with previous year.*

TRAVEL IMPACT ON MASSACHUSETTS - 2015

Travel-Generated Employment

One of the travel industry's most important contributions to Massachusetts' economy is in the number of businesses and jobs it supports. These jobs include a large number of executive and managerial positions as well as service-focused occupations.

Domestic and international traveler spending in Massachusetts directly generated 135,000 jobs, up 2.3 percent from 2014. Employment generated by domestic traveler spending increased 2.4 percent, and employment generated from international spending increased 1.2 percent.

On average, every $149,909 spent by domestic and international travelers in Massachusetts directly supported one job in 2015.

These travel-generated jobs comprised 3.9 percent of total non-agricultural employment in Massachusetts during 2015. Without these jobs generated by travel, Massachusetts's 2015 unemployment rate of 5 percent would have been 3.8 percentage points higher, increasing it to 8.8 percent.

Domestic and international traveler spending on foodservice, including restaurants and other eating and drinking places, provided more jobs than any other travel industry sector, up 2.1 percent from 2014 to 51,300 jobs. The labor intensiveness of these businesses contributes to the high level of travel employment in this sector.

Travel-Generated Employment in Massachusetts in 2015 by Industry Sector

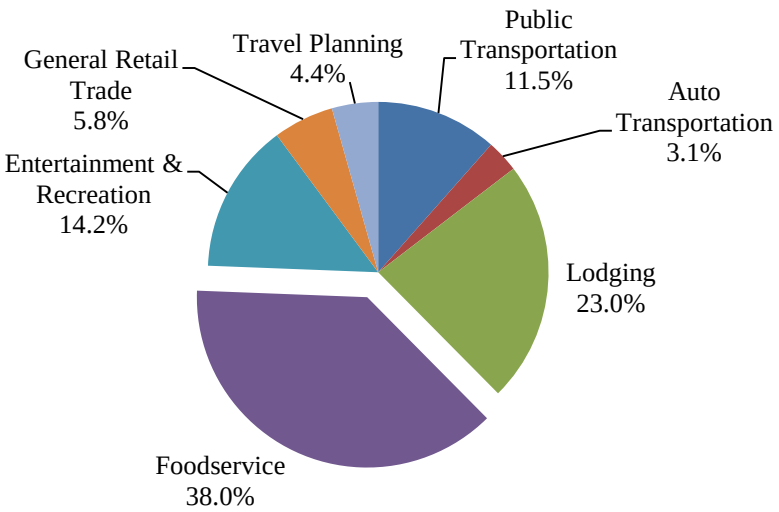


Table 9: Direct Travel-Generated Employment in Massachusetts by Industry Sector, 2014-2015

2015 Employment	Domestic (Thousands)	International (Thousands)	Total (Thousands)	% of Total
Public Transportation	14.8	0.8	15.6	11.5%
Auto Transportation	4.1	0.1	4.1	3.1%
Lodging	25.4	5.6	31.0	23.0%
Foodservice	45.0	6.3	51.3	38.0%
Entertainment & Recreation	16.0	3.3	19.2	14.2%
General Retail Trade	4.9	2.9	7.8	5.8%
Travel Planning *	5.9	0.0	5.9	4.4%
Total	116.0	18.9	135.0	100.0%
2014 Employment				
Public Transportation	14.3	0.8	15.1	11.4%
Auto Transportation	4.0	0.1	4.0	3.1%
Lodging	24.9	5.5	30.4	23.0%
Foodservice	44.1	6.1	50.3	38.1%
Entertainment & Recreation	15.5	3.2	18.6	14.1%
General Retail Trade	4.7	3.1	7.8	5.9%
Travel Planning *	5.8	0.0	5.8	4.4%
Total	113.3	18.7	132.0	100.0%
Percentage change 2015 over 2014	Domestic (%)	International (%)	Total (%)	
Public Transportation	3.4%	-1.5%	3.2%	
Auto Transportation	2.6%	10.2%	2.8%	
Lodging	2.0%	2.2%	2.0%	
Foodservice	2.0%	2.6%	2.1%	
Entertainment & Recreation	3.1%	2.9%	3.1%	
General Retail Trade	2.9%	-4.9%	-0.2%	
Travel Planning *	2.7%	_	2.7%	
Total	2.4%	1.2%	2.3%	

Source: U.S. Travel Association

** Refers to jobs created in travel arrangement firms such as travel agencies, wholesale and retail tour companies, and other travel-related service businesses.*

Table 10: Direct Travel Employment in Massachusetts by Industry Sector, 2011-2015

(Employment in Thousands)

	2011	2011	2011	2012	2012	2012	2013	2013	2013	2014	2014	2014	2015	2015	2015
Employment	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	13.7	0.8	14.5	14.0	0.8	14.8	14.3	0.8	15.1	14.3	0.8	15.1	14.8	0.8	15.6
Auto Trans.	3.8	0.1	3.9	3.8	0.1	3.9	3.9	0.1	4.0	4.0	0.1	4.0	4.1	0.1	4.1
Lodging	23.5	5.2	28.7	24.1	5.3	29.3	24.5	5.4	29.9	24.9	5.5	30.4	25.4	5.6	31.0
Foodservice	41.6	5.9	47.4	42.1	5.7	47.8	43.2	5.9	49.1	44.1	6.1	50.3	45.0	6.3	51.3
Entertainment & Rec.	14.2	2.9	17.1	14.6	2.9	17.5	15.0	3.0	18.0	15.5	3.2	18.6	16.0	3.3	19.2
General Retail Trade	4.6	3.0	7.6	4.6	3.0	7.6	4.7	3.0	7.7	4.7	3.1	7.8	4.9	2.9	7.8
Travel Planning	5.5	_	5.5	5.5	_	5.5	5.6	_	5.6	5.8	_	5.8	5.9	_	5.9
Total	106.8	17.9	124.7	108.8	17.7	126.5	111.1	18.2	129.4	113.3	18.7	132.0	116.0	18.9	135.0
% Change*	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	3.6%	7.0%	3.8%	2.4%	-3.6%	2.1%	1.8%	1.7%	1.8%	0.1%	0.1%	0.1%	3.4%	-1.5%	3.2%
Auto Trans.	1.9%	4.2%	1.9%	1.7%	-3.0%	1.7%	1.1%	2.9%	1.2%	1.6%	5.0%	1.6%	2.6%	10.2%	2.8%
Lodging	1.6%	2.4%	1.7%	2.6%	1.4%	2.4%	2.0%	2.6%	2.1%	1.4%	2.0%	1.5%	2.0%	2.2%	2.0%
Foodservice	2.0%	7.1%	2.6%	1.2%	-2.2%	0.8%	2.5%	3.7%	2.7%	2.3%	3.3%	2.4%	2.0%	2.6%	2.1%
Entertainment & Rec.	0.8%	3.9%	1.3%	2.5%	0.1%	2.1%	2.7%	3.7%	2.9%	3.5%	4.8%	3.7%	3.1%	2.9%	3.1%
General Retail Trade	1.3%	6.8%	3.4%	0.6%	-2.9%	-0.8%	1.4%	2.5%	1.8%	0.6%	1.0%	0.7%	2.9%	-4.9%	-0.2%
Travel Planning	3.7%	_	3.7%	1.0%	_	1.0%	1.6%	_	1.6%	3.0%	_	3.0%	2.7%	_	2.7%
Total	2.0%	5.1%	2.4%	1.8%	-1.0%	1.4%	2.2%	3.1%	2.3%	1.9%	2.6%	2.0%	2.4%	1.2%	2.3%
% of Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	12.8%	4.4%	11.6%	12.9%	4.3%	11.7%	12.9%	4.2%	11.6%	12.6%	4.1%	11.4%	12.8%	4.0%	11.5%
Auto Trans.	3.5%	0.4%	3.1%	3.5%	0.4%	3.1%	3.5%	0.4%	3.1%	3.5%	0.4%	3.1%	3.5%	0.5%	3.1%
Lodging	22.0%	29.1%	23.0%	22.1%	29.8%	23.2%	22.1%	29.7%	23.1%	22.0%	29.5%	23.0%	21.9%	29.8%	23.0%
Foodservice	38.9%	32.7%	38.1%	38.7%	32.3%	37.8%	38.8%	32.5%	38.0%	39.0%	32.7%	38.1%	38.8%	33.2%	38.0%
Entertainment & Rec.	13.3%	16.3%	13.7%	13.4%	16.4%	13.8%	13.5%	16.5%	13.9%	13.7%	16.9%	14.1%	13.8%	17.2%	14.2%
General Retail Sales	4.3%	17.0%	6.1%	4.3%	16.7%	6.0%	4.2%	16.6%	6.0%	4.2%	16.3%	5.9%	4.2%	15.3%	5.8%
Travel Planning	5.1%	_	4.4%	5.1%	_	4.4%	5.0%	_	4.3%	5.1%	_	4.4%	5.1%	_	4.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: U.S. Travel Association

** Compared with previous year and not adjusted by inflation rate.*

TRAVEL IMPACT ON MASSACHUSETTS - 2015

Travel-Generated Tax Revenue

Travel tax receipts are the federal, state and local tax revenues attributable to travel spending in Massachusetts. Travel-generated tax revenue is a significant economic benefit, as governments use these funds to support the travel infrastructure and help support a variety of public programs.

In 2015, domestic and international traveler spending in Massachusetts generated $3.0 billion in tax revenue for federal, state and local governments, up 6.6 percent from 2014. Domestic traveler spending generated $2.6 billion and international traveler spending generated $435.2 million, up 6.7 percent and 6.4 percent, respectively, from 2014.

Of the total $3.0 billion in tax revenue, the federal government received 56.9 percent or $1.7 billion, up 6.1 percent from 2014. Each dollar spent by domestic and international travelers in Massachusetts produced 8.5 cents for federal tax coffers.

Domestic and international traveler spending in Massachusetts also generated $812.2 million in tax revenue for the state treasury through state sales and excise taxes, and taxes on personal and corporate income during 2015, up 8.3 percent from 2014. This $812.2 million comprised 26.7 percent of all travel-generated tax revenue collected in the state. On average, each travel dollar produced 4.0 cents in state tax receipts.

Local governments in Massachusetts directly benefited from travel as well. Travel taxes collected by local governments increased 5.6 percent to $497.7 million in 2015 through various kinds of county or city taxes such as local hotel occupancy tax, sales tax and property tax related to travel, etc. This growth includes the increase of local room tax rate in some counties. Each domestic travel dollar produced 2.5 cents for local tax coffers.

Travel-Generated Tax Revenue in Massachusetts in 2015 by Level of Government

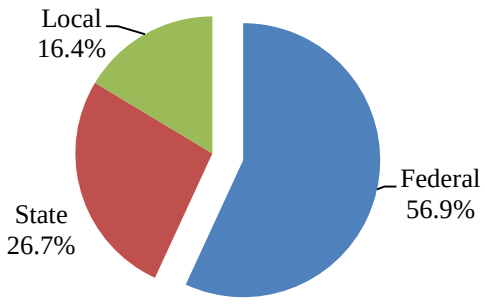


Table 11: Direct Travel-Generated Tax Revenue in Massachusetts by Level of Government, 2014-2015

2015 Tax Revenue	Domestic ($ Millions)	International ($ Millions)	Total ($ Millions)	% of Total
Federal	$1,463.7	$264.6	$1,728.3	56.9%
State	700.0	112.2	812.2	26.7%
Local	439.4	58.3	497.7	16.4%
Total	$2,603.0	$435.2	$3,038.2	100.0%
2014 Tax Revenue				
Federal	$1,378.5	$249.8	$1,628.3	57.1%
State	645.8	103.8	749.6	26.3%
Local	416.1	55.3	471.4	16.5%
Total	$2,440.4	$408.9	$2,849.4	100.0%
Percentage change 2015 over 2014	Domestic (%)	International (%)	Total (%)	
Federal	6.2%	5.9%	6.1%	
State	8.4%	8.1%	8.3%	
Local	5.6%	5.4%	5.6%	
Total	6.7%	6.4%	6.6%	

Source: U.S. Travel Association

Table 12: Direct Travel Tax Revenue in Massachusetts by Level of Government, 2011-2015
(Tax Revenues $ Millions)

	2011	2011	2011	2012	2012	2012	2013	2013	2013	2014	2014	2014	2015	2015	2015
Tax Revenue	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Federal	1,202.0	216.9	1,419.0	1,253.4	218.4	1,471.7	1,313.6	231.7	1,545.4	1,378.5	249.8	1,628.3	1,463.7	264.6	1,728.3
State	562.2	90.0	652.2	585.9	90.5	676.4	612.7	95.9	708.6	645.8	103.8	749.6	700.0	112.2	812.2
Local	358.6	47.5	406.1	379.7	48.6	428.3	396.3	51.3	447.6	416.1	55.3	471.4	439.4	58.3	497.7
Total	2,122.9	354.4	2,477.3	2,219.0	357.5	2,576.4	2,322.7	378.9	2,701.6	2,440.4	408.9	2,849.4	2,603.0	435.2	3,038.2
% Change*	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Federal	4.6%	7.7%	5.1%	4.3%	0.7%	3.7%	4.8%	6.1%	5.0%	4.9%	7.8%	5.4%	6.2%	5.9%	6.1%
State	4.3%	7.4%	4.7%	4.2%	0.6%	3.7%	4.6%	5.9%	4.8%	5.4%	8.3%	5.8%	8.4%	8.1%	8.3%
Local	5.5%	8.6%	5.9%	5.9%	2.2%	5.5%	4.4%	5.7%	4.5%	5.0%	7.8%	5.3%	5.6%	5.4%	5.6%
Total	4.7%	7.7%	5.1%	4.5%	0.9%	4.0%	4.7%	6.0%	4.9%	5.1%	7.9%	5.5%	6.7%	6.4%	6.6%
% of Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Federal	56.6%	61.2%	57.3%	56.5%	61.1%	57.1%	56.6%	61.2%	57.2%	56.5%	61.1%	57.1%	56.2%	60.8%	56.9%
State	26.5%	25.4%	26.3%	26.4%	25.3%	26.3%	26.4%	25.3%	26.2%	26.5%	25.4%	26.3%	26.9%	25.8%	26.7%
Local	16.9%	13.4%	16.4%	17.1%	13.6%	16.6%	17.1%	13.5%	16.6%	17.1%	13.5%	16.5%	16.9%	13.4%	16.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: U.S. Travel Association
** Compared with previous year and not adjusted by inflation rate.*

MULTIPLIER IMPACT OF TRAVEL SPENDING IN MASSACHUSETTS

Travelers in Massachusetts produce "secondary" impacts over and above that of their original expenditures previously detailed. These secondary outputs (sales), employment and earnings (wage and salary income) arise from "indirect" and "induced" impacts.

Indirect impacts occur as travel industry business operators, such as restaurateurs, purchase goods, such as food and beverages, and services, such as electricity and building maintenance, from local suppliers. These purchases generate additional output or sales indirectly.

Induced impact occurs as a result of the employees of businesses, and their suppliers, spending part of their earnings in the area. This spending generates sales in addition to the indirect impact.

The sum of the indirect and induced effects comprises the total secondary impact in the state. The ratio of the sum of primary output generated plus secondary output to initial expenditures alone is commonly termed the sales or output "multiplier."

During the secondary impact process, wage and salary income (earnings) is generated in addition to that produced by the initial travel expenditures as the suppliers employ labor to produce the additional output. The "earnings multiplier" is the ratio of the total primary and secondary earnings generated by the initial travel spending to that spending. Just as additional earnings are created, employment is also generated during the secondary impact process. The "employment multiplier" represents the number of jobs provided, directly and indirectly, for each one million dollars of output or expenditures generated.

Table 13 summarizes the direct, indirect and induced, and total impacts of travel spending on the Massachusetts economy from 2011 to 2015. Table 14 shows the comparison of expenditure, earnings, and employment multipliers for the same period.

In 2015, the $20.2 billion spent directly by domestic and international travelers in Massachusetts generated $32.0 billion in total output, up 3.7 percent from 2014. The output multiplier (the ratio of total output to the initial spending) is 1.58. This indicates that the average travel dollar generated an additional 58 cents in secondary sales.

In addition to the $4.4 billion in payroll income generated by direct travel spending, $4.0 billion in earnings was produced by secondary impacts in 2015. The earnings multiplier (the ratio of total earnings generated to the initial spending) is 0.41.

In addition, travel in Massachusetts directly and indirectly supported a total of 216,900 jobs in 2015. The employment multiplier (the ratio of total employment generated to initial spending) is 10.7. This means that every $1 million spent by domestic and international travelers in Massachusetts supported 10.7 jobs in the state during 2015.

Table 13: Multiplier Impact of Traveler Spending in Massachusetts, 2011-2015

Year	Impact Measure	Direct Impact	Indirect & Induced Impact	Total Impact
2015	Expenditures (millions)	$20,233.3	$11,752.8	$31,986.1
	Earnings (millions)	$4,414.5	$3,973.6	$8,388.1
	Employment (thousands)	135.0	81.9	216.9
2014	Expenditures (millions)	$19,500.7	$11,341.7	$30,842.3
	Earnings (millions)	$4,118.8	$3,743.7	$7,862.5
	Employment (thousands)	132.0	80.2	212.2
2013	Expenditures (millions)	$18,481.8	$10,812.2	$29,294.0
	Earnings (millions)	$3,928.1	$3,558.8	$7,486.9
	Employment (thousands)	129.4	79.1	208.5
2012	Expenditures (millions)	$17,739.6	$10,465.3	$28,204.9
	Earnings (millions)	$3,742.0	$3,423.2	$7,165.2
	Employment (thousands)	126.5	78.0	204.5
2011	Expenditures (millions)	$16,913.8	$10,022.3	$26,936.2
	Earnings (millions)	$3,629.0	$3,334.4	$6,963.4
	Employment (thousands)	124.7	77.3	202.0

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, RIMS II; U.S. Travel Association

Table 14: Multipliers of Travel in Massachusetts, 2011-2015

Multipliers	2011	2012	2013	2014	2015
Output Multiplier	1.59	1.59	1.59	1.58	1.58
Earning Multiplier	0.41	0.40	0.41	0.40	0.41
Employment Multiplier	11.9	11.5	11.3	10.9	10.7

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, RIMS II; U.S. Travel Association

DOMESTIC TRAVEL IMPACT ON MASSACHUSETTS COUNTIES - 2015

During 2015, domestic travelers spent $17.4 billion while traveling in Massachusetts, up 3.8 percent from 2014. These expenditures directly generated $3.8 billion in payroll income and 116,000 jobs for Massachusetts' residents. Tax revenue generated by this spending amounted to $700.0 million for the state government and $439.4 million for local governments.

Travel expenditures occurred throughout all 14 counties in Massachusetts. The top five counties in Massachusetts received $14.2 billion in direct domestic traveler expenditures, 81.0 percent of the state total. Domestic travel expenditures directly generated $3.1 billion in payroll income (81.5 percent) in the top five counties and 93,000 jobs (80.1 percent) in 2015. Domestic traveler expenditures in the top five counties also generated $528.4 million in tax revenue for the state treasury and $340.7 million tax revenue for local governments in 2015. The top five counties in Massachusetts contributed 75.5 and 77.5 percent of the total tax revenue for the state treasury and local governments respectively.

Domestic Travel Impact on Top Five Counties

Suffolk County, which includes the city of Boston, led all counties in direct domestic travel expenditures, payroll income and jobs directly generated by domestic travel in 2015. Direct domestic travel expenditures in Suffolk County totaled $8.6 billion, accounting for nearly half (49.3%) of the state total, up 3.9 percent from 2014. These expenditures generated $1.6 billion in payroll income and 45,900 jobs for the county residents, up 8.2 percent and 2.9 percent respectively from 2014.

Middlesex County, which includes suburbs north and west of Boston, ranked second with over $2.5 billion in domestic travel spending in 2015, up 3.7 percent from 2014. Domestic traveler spending in Middlesex County represented about one-seventh (14.6%) of the state total. Payroll income and jobs directly attributable to domestic travel spending totaled $674.5 million and 21,000 jobs.

Norfolk County received $1.1 billion from domestic travelers, 6.3 percent of the state total and up 4.6 percent from 2014. These travel expenditures benefited the county with $332.3 million in payroll income and 10,300 jobs.

In fourth place, Barnstable County, which includes Cape Cod, posted $1.0 billion in domestic expenditures, 5.8 percent of the state total. The expenditures generated $260.1 million in payroll as well as 9,000 jobs within the county.

Essex County ranked fifth with $876.2 million in domestic travel spending in 2015, a 1.7 percent increase from 2014. Domestic traveler spending in Essex County generated $201.4 million payroll income and 6,700 jobs during 2015.

Table 15: Domestic Travel Impact in Massachusetts - Top 5 Counties, 2014-2015

2015 Impact

County	Expenditures ($ Millions)	Payroll ($ Millions)	Employment (Thousands)	State Tax Receipts ($ Millions)	Local Tax Receipts ($ Millions)
Suffolk	$8,628.2	$1,632.3	45.9	$231.9	$163.4
Middlesex	2,547.7	674.5	21.0	144.3	68.7
Norfolk	1,101.3	332.3	10.3	60.4	24.6
Barnstable	1,005.8	260.1	9.0	44.3	61.4
Essex	876.2	201.4	6.7	47.5	22.6
Five County Total	$14,159.1	$3,100.7	93.0	$528.4	$340.7
State Totals	$17,484.7	$3,805.3	116.0	$700.0	$439.4
Share of Top 5 Counties	81.0%	81.5%	80.1%	75.5%	77.5%

2014 Impact

Suffolk	$8,306.9	$1,508.7	44.7	$213.6	$154.9
Middlesex	2,457.8	633.0	20.6	133.2	65.3
Norfolk	1,052.5	308.2	10.0	55.3	23.2
Barnstable	956.6	240.0	8.8	40.3	57.5
Essex	861.8	192.2	6.7	44.7	21.9
Five County Total	$13,635.6	$2,882.1	90.7	$487.1	$322.7
State Total	$16,846.4	$3,540.2	113.3	$645.8	$416.1
Share of Top 5 Counties	80.9%	81.4%	80.1%	75.4%	77.6%

Percent Change 2015 over 2014

Suffolk	3.9%	8.2%	2.9%	8.5%	5.5%
Middlesex	3.7%	6.6%	1.9%	8.3%	5.3%
Norfolk	4.6%	7.8%	2.9%	9.3%	6.3%
Barnstable	5.1%	8.4%	2.8%	9.9%	6.8%
Essex	1.7%	4.8%	0.7%	6.2%	3.2%
Five County Total	3.8%	7.6%	2.5%	8.5%	5.6%
State Total	3.8%	7.5%	2.4%	8.4%	5.6%

Source: U.S. Travel Association

COUNTY TABLES

The following tables list the results of the County Economic Impact Component of U.S. Travel Association's Travel Economic Impact Model for Massachusetts in 2013 and 2014 estimates by county. The estimates presented are for direct domestic travel expenditures and related economic impact. Detailed international impact data is not available at the county level.

Table A	Counties listed alphabetically, with 2015 travel expenditures, travel-generated payroll and employment, and state tax revenue and the local tax revenue for each.
Table B	Ranks the counties in order of 2015 travel expenditures from highest to lowest.
Table C	Percent distribution for each impact measure in 2015.
Table D	Percent change in 2015 over 2014 estimates for each of the measures of economic impact.
Table E	Counties listed alphabetically, with 2014 travel expenditures, travel-generated payroll and employment, and state tax revenue and local tax revenue shown for each.
Table F	Annual domestic travel expenditures and percentage change over previous year by county from 2011 to 2015.
Table G	Domestic travel-generated payroll and percentage change over previous year by county from 2011 to 2015.
Table H	Domestic travel-generated employment and percentage change over previous year by county from 2011 to 2015.
Table I	Domestic travel-generated tax revenue and percentage change over previous year by county for state government from 2011 to 2015.
Table J	Domestic travel-generated tax revenue and percentage change over previous year by county for local government from 2011 to 2015.
Table K	Economic Impact of Domestic Travel on Massachusetts 15 RTCs, 2015.
Table L	Economic Impact of Domestic Travel on Massachusetts 15 RTCs, 2014.

2015 Domestic Travel Impact on Massachusetts
Table A: Alphabetical by County, Preliminary 2015

County	Expenditures ($ Millions)	Payroll ($ Millions)	Employment (Thousands)	State Tax Receipts ($ Millions)	Local Tax Receipts ($ Millions)
Barnstable	$1,005.78	$260.11	9.03	$44.26	$61.39
Berkshire	412.62	103.09	3.65	20.97	12.01
Bristol	475.04	96.82	3.09	25.56	9.48
Dukes	140.56	35.05	1.28	5.49	8.17
Essex	876.17	201.38	6.72	47.51	22.57
Franklin	59.95	10.91	0.37	3.38	1.96
Hampden	489.05	110.57	3.17	27.66	10.08
Hampshire	128.12	27.56	0.89	7.02	3.52
Middlesex	2,547.67	674.53	21.01	144.31	68.70
Nantucket	168.40	36.18	1.06	5.25	5.95
Norfolk	1,101.28	332.34	10.28	60.43	24.63
Plymouth	595.15	117.53	3.93	29.74	27.83
Suffolk	8,628.17	1,632.34	45.93	231.85	163.39
Worcester	856.76	166.89	5.60	46.56	19.68
Statewide	**$17,484.71**	**$3,805.29**	**116.02**	**$699.99**	**$439.38**

2015 Domestic Travel Impact on Massachusetts
Table B: Ranking of Counties by Expenditure Levels, Preliminary 2015

County	Expenditures ($ Millions)	Payroll ($ Millions)	Employment (Thousands)	State Tax Receipts ($ Millions)	Local Tax Receipts ($ Millions)
Suffolk	$8,628.17	$1,632.34	45.93	$231.85	$163.39
Middlesex	2,547.67	674.53	21.01	144.31	68.70
Norfolk	1,101.28	332.34	10.28	60.43	24.63
Barnstable	1,005.78	260.11	9.03	44.26	61.39
Essex	876.17	201.38	6.72	47.51	22.57
Worcester	856.76	166.89	5.60	46.56	19.68
Plymouth	595.15	117.53	3.93	29.74	27.83
Hampden	489.05	110.57	3.17	27.66	10.08
Bristol	475.04	96.82	3.09	25.56	9.48
Berkshire	412.62	103.09	3.65	20.97	12.01
Nantucket	168.40	36.18	1.06	5.25	5.95
Dukes	140.56	35.05	1.28	5.49	8.17
Hampshire	128.12	27.56	0.89	7.02	3.52
Franklin	59.95	10.91	0.37	3.38	1.96
Statewide	**$17,484.71**	**$3,805.29**	**116.02**	**$699.99**	**$439.38**

2015 Domestic Travel Impact on Massachusetts
Table C: Percent Distribution by County, Preliminary 2015

County	Expenditures	Payroll	Employment	State Tax	Local Tax
Barnstable	5.75%	6.84%	7.78%	6.32%	13.97%
Berkshire	2.36%	2.71%	3.15%	3.00%	2.73%
Bristol	2.72%	2.54%	2.66%	3.65%	2.16%
Dukes	0.80%	0.92%	1.10%	0.78%	1.86%
Essex	5.01%	5.29%	5.80%	6.79%	5.14%
Franklin	0.34%	0.29%	0.32%	0.48%	0.45%
Hampden	2.80%	2.91%	2.73%	3.95%	2.29%
Hampshire	0.73%	0.72%	0.76%	1.00%	0.80%
Middlesex	14.57%	17.73%	18.11%	20.62%	15.64%
Nantucket	0.96%	0.95%	0.92%	0.75%	1.36%
Norfolk	6.30%	8.73%	8.86%	8.63%	5.61%
Plymouth	3.40%	3.09%	3.39%	4.25%	6.33%
Suffolk	49.35%	42.90%	39.59%	33.12%	37.19%
Worcester	4.90%	4.39%	4.83%	6.65%	4.48%
Statewide	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

2015 Domestic Travel Impact on Massachusetts
Table D: Percent Change over 2014

County	Expenditures	Payroll	Employment	State Tax	Local Tax
Barnstable	5.14%	8.38%	2.76%	9.87%	6.78%
Berkshire	6.64%	9.92%	3.38%	11.44%	8.29%
Bristol	2.14%	5.28%	0.94%	6.73%	3.72%
Dukes	5.41%	9.07%	3.62%	10.16%	7.05%
Essex	1.66%	4.79%	0.71%	6.24%	3.24%
Franklin	-1.65%	2.44%	-0.94%	2.78%	-0.12%
Hampden	0.00%	3.88%	0.05%	4.50%	1.55%
Hampshire	2.25%	5.39%	1.31%	6.85%	3.84%
Middlesex	3.66%	6.56%	1.89%	8.32%	5.27%
Nantucket	3.82%	7.31%	2.33%	8.49%	5.43%
Norfolk	4.63%	7.85%	2.85%	9.34%	6.25%
Plymouth	5.65%	8.90%	3.85%	10.40%	7.29%
Suffolk	3.87%	8.19%	2.87%	8.54%	5.48%
Worcester	3.89%	7.40%	2.49%	8.57%	5.50%
Statewide	**3.79%**	**7.49%**	**2.43%**	**8.38%**	**5.60%**

2015 Domestic Travel Impact on Massachusetts
Table E: Alphabetical by County, 2014

County	Expenditures ($ Millions)	Payroll ($ Millions)	Employment (Thousands)	State Tax Receipts ($ Millions)	Local Tax Receipts ($ Millions)
Barnstable	$956.56	$240.01	8.79	$40.28	$57.50
Berkshire	386.93	93.79	3.53	18.82	11.09
Bristol	465.09	91.96	3.06	23.94	9.14
Dukes	133.34	32.13	1.23	4.98	7.63
Essex	861.83	192.18	6.68	44.72	21.86
Franklin	60.96	10.65	0.37	3.29	1.96
Hampden	489.04	106.44	3.17	26.47	9.93
Hampshire	125.30	26.15	0.87	6.57	3.39
Middlesex	2,457.77	633.02	20.62	133.22	65.27
Nantucket	162.20	33.72	1.04	4.84	5.65
Norfolk	1,052.53	308.16	9.99	55.27	23.18
Plymouth	563.32	107.93	3.79	26.94	25.94
Suffolk	8,306.90	1,508.70	44.65	213.61	154.90
Worcester	824.66	155.40	5.46	42.89	18.65
Statewide	**$16,846.42**	**$3,540.24**	**113.27**	**$645.85**	**$416.10**

Table F: Domestic Travel Expenditures by County, 2011-2015

Expenditures ($ Millions)

County	2011	2012	2013	2014	2015
Barnstable	$851.8	$902.6	$931.8	$956.6	$1,005.8
Berkshire	345.8	355.1	367.3	386.9	412.6
Bristol	421.2	447.7	461.6	465.1	475.0
Dukes	122.3	128.0	128.3	133.3	140.6
Essex	752.7	780.5	816.3	861.8	876.2
Franklin	56.0	57.8	58.9	61.0	60.0
Hampden	483.0	484.3	484.9	489.0	489.0
Hampshire	111.1	119.8	124.1	125.3	128.1
Middlesex	2,161.2	2,258.1	2,324.1	2,457.8	2,547.7
Nantucket	147.7	152.6	157.8	162.2	168.4
Norfolk	922.5	972.3	1,007.4	1,052.5	1,101.3
Plymouth	514.2	533.0	539.5	563.3	595.1
Suffolk	6,979.1	7,442.9	7,819.2	8,306.9	8,628.2
Worcester	751.3	771.1	803.0	824.7	856.8
State Totals	**$14,619.8**	**$15,405.8**	**$16,024.1**	**$16,846.4**	**$17,484.7**

Percentage Change Over Previous Year

County	2011/2010	2012/2011	2013/2012	2014/2013	2015/2014
Barnstable	4.8%	6.0%	3.2%	2.7%	5.1%
Berkshire	5.7%	2.7%	3.4%	5.3%	6.6%
Bristol	9.6%	6.3%	3.1%	0.8%	2.1%
Dukes	8.9%	4.6%	0.2%	3.9%	5.4%
Essex	9.0%	3.7%	4.6%	5.6%	1.7%
Franklin	10.4%	3.2%	1.9%	3.5%	-1.6%
Hampden	9.1%	0.3%	0.1%	0.9%	0.0%
Hampshire	8.4%	7.9%	3.5%	1.0%	2.3%
Middlesex	7.8%	4.5%	2.9%	5.8%	3.7%
Nantucket	5.2%	3.3%	3.4%	2.8%	3.8%
Norfolk	10.1%	5.4%	3.6%	4.5%	4.6%
Plymouth	8.3%	3.7%	1.2%	4.4%	5.7%
Suffolk	8.9%	6.6%	5.1%	6.2%	3.9%
Worcester	9.5%	2.6%	4.1%	2.7%	3.9%
State Totals	**8.5%**	**5.4%**	**4.0%**	**5.1%**	**3.8%**

Table G: Domestic Travel-Generated Payroll by County, 2011-2015

Payroll ($ Millions)

County	2011	2012	2013	2014	2015
Barnstable	$217.6	$226.7	$236.7	$240.0	$260.1
Berkshire	86.5	86.1	90.0	93.8	103.1
Bristol	83.7	87.0	90.8	92.0	96.8
Dukes	29.8	30.8	31.3	32.1	35.0
Essex	168.0	170.5	180.6	192.2	201.4
Franklin	9.8	9.9	10.2	10.7	10.9
Hampden	101.6	101.9	104.6	106.4	110.6
Hampshire	23.3	24.7	25.8	26.1	27.6
Middlesex	552.0	579.5	602.1	633.0	674.5
Nantucket	30.3	31.2	32.9	33.7	36.2
Norfolk	268.3	277.3	294.2	308.2	332.3
Plymouth	97.8	100.8	103.7	107.9	117.5
Suffolk	1,300.9	1,354.3	1,427.8	1,508.7	1,632.3
Worcester	144.0	145.0	152.9	155.4	166.9
State Totals	**$3,113.7**	**$3,225.7**	**$3,383.6**	**$3,540.2**	**$3,805.3**

Percentage Change Over Previous Year

County	2011/2010	2012/2011	2013/2012	2014/2013	2015/2014
Barnstable	1.9%	4.2%	4.4%	1.4%	8.4%
Berkshire	1.9%	-0.5%	4.6%	4.2%	9.9%
Bristol	1.8%	3.9%	4.4%	1.3%	5.3%
Dukes	4.8%	3.2%	1.5%	2.8%	9.1%
Essex	3.5%	1.5%	5.9%	6.4%	4.8%
Franklin	0.8%	1.4%	3.3%	4.1%	2.4%
Hampden	3.8%	0.2%	2.7%	1.7%	3.9%
Hampshire	2.4%	5.9%	4.6%	1.4%	5.4%
Middlesex	4.1%	5.0%	3.9%	5.1%	6.6%
Nantucket	2.4%	3.1%	5.2%	2.6%	7.3%
Norfolk	4.2%	3.4%	6.1%	4.8%	7.8%
Plymouth	2.0%	3.0%	2.9%	4.1%	8.9%
Suffolk	5.1%	4.1%	5.4%	5.7%	8.2%
Worcester	3.5%	0.7%	5.5%	1.6%	7.4%
State Totals	**4.0%**	**3.6%**	**4.9%**	**4.6%**	**7.5%**

Table H: Domestic Travel-Generated Employment by County, 2011-2015

Employment (in thousands)

County	2011	2012	2013	2014	2015
Barnstable	8.4	8.6	8.8	8.8	9.0
Berkshire	3.5	3.4	3.5	3.5	3.7
Bristol	2.9	3.0	3.1	3.1	3.1
Dukes	1.2	1.2	1.2	1.2	1.3
Essex	6.2	6.2	6.4	6.7	6.7
Franklin	0.4	0.4	0.4	0.4	0.4
Hampden	3.2	3.2	3.2	3.2	3.2
Hampshire	0.8	0.9	0.9	0.9	0.9
Middlesex	19.5	19.8	20.1	20.6	21.0
Nantucket	1.0	1.0	1.0	1.0	1.1
Norfolk	9.3	9.5	9.8	10.0	10.3
Plymouth	3.6	3.6	3.7	3.8	3.9
Suffolk	41.5	42.7	43.6	44.7	45.9
Worcester	5.3	5.3	5.5	5.5	5.6
State Totals	**106.8**	**108.8**	**111.1**	**113.3**	**116.0**

Percentage Change Over Previous Year

County	2011/2010	2012/2011	2013/2012	2014/2013	2015/2014
Barnstable	0.0%	2.1%	2.2%	0.0%	2.8%
Berkshire	0.3%	-2.0%	2.5%	1.6%	3.4%
Bristol	0.2%	2.0%	2.3%	-0.5%	0.9%
Dukes	2.3%	1.7%	0.2%	2.4%	3.6%
Essex	1.8%	0.4%	3.4%	3.6%	0.7%
Franklin	0.1%	-0.1%	2.1%	2.2%	-0.9%
Hampden	2.2%	-1.3%	0.6%	-0.5%	0.0%
Hampshire	0.4%	3.6%	2.1%	-0.8%	1.3%
Middlesex	1.2%	1.7%	1.4%	2.7%	1.9%
Nantucket	0.6%	2.0%	3.0%	0.0%	2.3%
Norfolk	3.2%	1.7%	3.7%	1.8%	2.9%
Plymouth	0.5%	1.5%	1.3%	2.4%	3.9%
Suffolk	3.0%	2.9%	2.2%	2.4%	2.9%
Worcester	1.6%	-0.5%	3.0%	0.1%	2.5%
State Totals	**2.0%**	**1.8%**	**2.2%**	**1.9%**	**2.4%**

Table I: Domestic Travel-Generated Tax Revenue for Massachusetts State Government by County, 2011-2015

Tax Revenue for State Government ($ Millions)

County	2011	2012	2013	2014	2015
Barnstable	$35.9	$37.7	$39.3	$40.3	$44.3
Berkshire	17.1	17.2	17.9	18.8	21.0
Bristol	21.6	22.5	23.6	23.9	25.6
Dukes	4.6	4.8	4.8	5.0	5.5
Essex	38.8	39.8	42.1	44.7	47.5
Franklin	3.0	3.0	3.1	3.3	3.4
Hampden	25.9	25.7	26.0	26.5	27.7
Hampshire	5.8	6.2	6.5	6.6	7.0
Middlesex	115.7	121.1	125.8	133.2	144.3
Nantucket	4.3	4.5	4.6	4.8	5.3
Norfolk	47.6	49.6	52.3	55.3	60.4
Plymouth	24.4	25.0	25.7	26.9	29.7
Suffolk	178.7	189.3	199.6	213.6	231.9
Worcester	38.7	39.4	41.4	42.9	46.6
State Totals	**$562.2**	**$585.9**	**$612.7**	**$645.8**	**$700.0**

Percentage Change Over Previous Year

County	2011/2010	2012/2011	2013/2012	2014/2013	2015/2014
Barnstable	3.7%	5.0%	4.1%	2.6%	9.9%
Berkshire	3.4%	0.5%	3.8%	5.2%	11.4%
Bristol	4.0%	4.3%	4.6%	1.6%	6.7%
Dukes	5.5%	4.0%	0.4%	4.1%	10.2%
Essex	3.8%	2.7%	5.7%	6.4%	6.2%
Franklin	2.6%	1.5%	3.3%	5.1%	2.8%
Hampden	4.9%	-0.9%	1.2%	1.7%	4.5%
Hampshire	3.7%	6.5%	4.5%	1.6%	6.9%
Middlesex	4.2%	4.6%	3.9%	5.9%	8.3%
Nantucket	4.0%	3.6%	4.1%	4.4%	8.5%
Norfolk	4.9%	4.2%	5.4%	5.6%	9.3%
Plymouth	3.7%	2.8%	2.7%	4.8%	10.4%
Suffolk	4.7%	6.0%	5.4%	7.0%	8.5%
Worcester	4.3%	1.6%	5.0%	3.7%	8.6%
State Totals	**4.3%**	**4.2%**	**4.6%**	**5.4%**	**8.4%**

Table J: Domestic Travel-Generated Tax Revenue for Local Governments in Massachusetts by County, 2011-2015

Tax Revenue for Local Governments ($ Millions)

County	2011	2012	2013	2014	2015
Barnstable	$51.5	$54.0	$56.0	$57.5	$61.4
Berkshire	9.8	10.2	10.5	11.1	12.0
Bristol	8.1	8.5	8.9	9.1	9.5
Dukes	7.0	7.3	7.3	7.6	8.2
Essex	19.3	20.2	20.9	21.9	22.6
Franklin	1.8	1.8	1.9	2.0	2.0
Hampden	9.5	9.7	9.7	9.9	10.1
Hampshire	3.0	3.2	3.3	3.4	3.5
Middlesex	57.1	60.4	62.7	65.3	68.7
Nantucket	5.2	5.3	5.5	5.6	6.0
Norfolk	19.8	21.1	22.2	23.2	24.6
Plymouth	23.2	24.2	25.1	25.9	27.8
Suffolk	127.0	136.5	144.3	154.9	163.4
Worcester	16.5	17.2	17.9	18.7	19.7
State Totals	**$358.6**	**$379.7**	**$396.3**	**$416.1**	**$439.4**

Percentage Change Over Previous Year

County	2011/2010	2012/2011	2013/2012	2014/2013	2015/2014
Barnstable	4.6%	4.9%	3.8%	2.6%	6.8%
Berkshire	6.4%	4.5%	3.3%	5.3%	8.3%
Bristol	6.2%	5.8%	4.6%	2.4%	3.7%
Dukes	4.8%	4.3%	1.2%	3.9%	7.1%
Essex	5.5%	4.5%	3.8%	4.4%	3.2%
Franklin	4.7%	3.4%	3.0%	4.5%	-0.1%
Hampden	7.1%	1.8%	0.6%	2.0%	1.6%
Hampshire	5.8%	6.5%	4.0%	2.1%	3.8%
Middlesex	5.6%	5.9%	3.7%	4.2%	5.3%
Nantucket	5.7%	2.3%	2.2%	3.6%	5.4%
Norfolk	6.6%	6.5%	5.1%	4.4%	6.3%
Plymouth	5.0%	4.5%	3.7%	3.3%	7.3%
Suffolk	5.5%	7.5%	5.7%	7.4%	5.5%
Worcester	6.1%	4.7%	4.0%	4.2%	5.5%
State Totals	**5.5%**	**5.9%**	**4.4%**	**5.0%**	**5.6%**

Table K: Economic Impact of Domestic Travel on Massachusetts 15 RTCs, 2015

Region	Expenditures ($ Millions)	Payroll ($ Millions)	Employment (Thousands)	State Tax Receipts ($ Millions)	Local Tax Receipts ($ Millions)
Greater Boston	$10,702.1	$2,206.5	63.9	$348.3	$214.2
Greater Merrimack Valley	990.1	265.5	8.3	56.7	27.2
Metro West	850.7	221.4	6.9	47.2	21.6
Johnny Appleseed	114.5	23.9	0.8	6.1	2.7
Central Massachusetts	476.4	88.8	3.0	24.8	10.6
Cape Cod (Barnstable County)	1,005.8	260.1	9.0	44.3	61.4
Berkshires (Berkshire County)	412.6	103.1	3.7	21.0	12.0
Southeastern MA (Bristol County)	475.0	96.8	3.1	25.6	9.5
Martha's Vineyard (Duke's County)	140.6	35.0	1.3	5.5	8.2
North of Boston (Essex County)	876.2	201.4	6.7	47.5	22.6
Franklin County (Franklin County)	60.0	10.9	0.4	3.4	2.0
Greater Springfield (Hampden County)	489.0	110.6	3.2	27.7	10.1
Hampshire County (Hampshire County)	128.1	27.6	0.9	7.0	3.5
Nantucket Chamber (Nantucket County)	168.4	36.2	1.1	5.3	6.0
Plymouth Chamber (Plymouth County)	595.1	117.5	3.9	29.7	27.8
Five Regions' Total	**$13,133.9**	**$2,806.1**	**$82.8**	**$483.1**	**$276.4**
Statewide Total	**$17,484.7**	**$3,805.3**	**$116.0**	**$700.0**	**$439.4**

Table L: Economic Impact of Domestic Travel on Massachusetts 15 RTCs, 2014

Region	Expenditures ($ Millions)	Payroll ($ Millions)	Employment (Thousands)	State Tax Receipts ($ Millions)	Local Tax Receipts ($ Millions)
Greater Boston	$10,298.8	$2,044.3	62.2	$320.7	$203.0
Greater Merrimack Valley	955.3	249.1	8.1	52.4	25.9
Metro West	818.9	206.9	6.8	43.5	20.5
Johnny Appleseed	110.3	22.3	0.8	5.6	2.6
Central Massachusetts	458.6	82.7	2.9	22.8	10.0
Cape Cod (Barnstable County)	956.6	240.0	8.8	40.3	57.5
Berkshires (Berkshire County)	386.9	93.8	3.5	18.8	11.1
Southeastern MA (Bristol County)	465.1	92.0	3.1	23.9	9.1
Martha's Vineyard (Duke's County)	133.3	32.1	1.2	5.0	7.6
North of Boston (Essex County)	861.8	192.2	6.7	44.7	21.9
Franklin County (Franklin County)	61.0	10.7	0.4	3.3	2.0
Greater Springfield (Hampden County)	489.0	106.4	3.2	26.5	9.9
Hampshire County (Hampshire County)	125.3	26.1	0.9	6.6	3.4
Nantucket Chamber (Nantucket County)	162.2	33.7	1.0	4.8	5.6
Plymouth Chamber (Plymouth County)	563.3	107.9	3.8	26.9	25.9
Five Regions' Total	**$12,641.9**	**$2,605.3**	**$80.7**	**$445.0**	**$262.0**
Statewide Total	**$16,846.4**	**$3,540.2**	**$113.3**	**$645.8**	**$416.1**

APPENDICES

Appendix A: Travel Economic Impact Model

Introduction

The Travel Economic Impact Model (TEIM) was developed by the research department at the U.S. Travel Association to provide annual estimates of the impact of the travel activity of U.S. residents on national, state and county economies in this country. It is a disaggregated model comprised of a variety of travel categories (described in Appendix B: Glossary of Terms). The TEIM estimates travel expenditures and the resulting business receipts, employment, personal income and tax receipts generated by these expenditures.

The TEIM has the capability of estimating the economic impact of various types of travel, such as business and vacation, by transport mode and type of accommodations used, and other trip and traveler characteristics. The County Impact Component of the TEIM allows estimates of the economic impact of travel at the county and city level.

Definition of Terms

There is no commonly accepted definition of travel in use at this time. For the purposes of the estimates herein, *travel* is defined as activities associated with all overnight and day trips to places 50 miles away or more, one way, from the traveler's origin and any overnight trips away from home in paid accommodations.

The word *tourism* is avoided in this report because of its vague meaning. Some define tourism as all travel away from home while others use the dictionary definition that limits tourism to personal or pleasure travel.

The *travel industry*, as used herein, refers to the collection of 18 types of businesses that provide goods and services to the traveler or potential traveler at the retail level (see Glossary of Terms). With the exception of Amtrak and second home ownership and rental, these business types are defined by the Office of Management and Budget in the 1997 North American Industry Classification System (NAICS) and well as in its predecessor, the 1987 Standard Industrial Classification System (SIC). In each case, the relevant NAICS and SIC codes are included.

Travel *expenditure* is assumed to take place whenever traveler exchanges money for an activity considered part of his/her trip. Total travel expenditures are separated into related categories representing traveler purchases of goods and services at the retail level. One category, travel agents, receives no travel expenditures as these purchases are allocated to the category (i.e. air transportation) actually providing the final good or service to the traveler. Travel expenditures are allocated among states by simulating where the exchange of money for goods or service actually took place. By their nature, some travel expenditures are assumed to occur at the traveler's origin, some at his/her destination, and some en route.

Economic impact is represented by measures of spending, employment, payroll, business receipts and tax revenues generated by traveler spending. *Payroll* includes all forms of compensation, such as salaries, wages, commissions, bonuses, vacation allowances, sick leave pay and the value of payments in kind paid during the year to all employees. Payroll is reported before deductions for social security, income tax insurance, union dues, etc. This definition follows that used by the U.S. Census Bureau in the quinquennial Census of Service Industries.

Employment represents the number of jobs generated by traveler spending, both full and part-time. As such, it is consistent with the U.S. Department of Labor series on nonagricultural payroll employment. *Tax revenues* include corporate income, individual income, sales and gross receipts, and excise taxes by level

of government. *Business receipts* reflect travel expenditures less the sales and excise taxes imposed on those expenditures.

Description of the Model

Estimates of Travel Expenditures

Total travel expenditures includes spending by travelers on goods and services during their trips, such as lodging, transportation, meals, entertainment, retail shopping. The TEIM covers 18 categories of activities. Generally, the TEIM combines the activity levels for trips to places within the United States with the appropriate average costs of each unit of travel activity, (e.g., cost per mile by mode of transport, cost per night by type of accommodation), to produce estimates of the total amount spent on each of 18 categories of travel related goods and services by state. For example, the number of nights spent by travel parties in hotels in Massachusetts is multiplied by the average cost per night per travel party of staying in a hotel in the state to obtain the estimate of traveler expenditures for hotel accommodations. The estimates derived through the cost factor method are also validated through three additional methods: Household travel spending ratio method: the ratio of out of town spending to total household spending; Trip expenditure ratio method: the ratio of each travel spending category in a trip to that trip's total expenditures; and economic and business statistics validations.

The data on domestic travel activity levels (e.g., number of miles traveled by mode of transportation, the number of nights spent away from home by type of accommodation) are based on national travel surveys conducted by the U.S. Travel Association, The Bureau of Labor Statistics' Survey of Consumer Expenditures, Smith Travel Research's Hotel and Motel Survey, etc. Average cost data are purchased and collected from various organizations and government agencies. Total sales, revenue and other data collected from state, local and federal governments and other organizations are employed to compare, adjust and update the spending database of TEIM, as well as linking spending to other impact components.

The international travel expenditure estimates are based on Tourism Industries' (OTTI) Survey of International Air Travelers and data provided to OTTI from Canada and Mexico. Other estimates of the economic impact of international visitors to the U.S. are generated by TEIM by incorporating the estimated international traveler expenditures with the data series utilized to produce the domestic estimates.

Estimates of Business Receipts, Payroll and Employment

The Economic Impact Component of the TEIM estimates travel generated business receipts, employment, and payroll. Basically, the 18 travel categories are associated with a type of travel-related business. For example, traveler spending on commercial lodging in a state is related to the business receipts, employment and payroll of hotels, motels and motor hotels (SIC 701; NAICS 7211) in the state. It is assumed that travel spending in each category, less sales and excise taxes, equals business receipts for the related business type as defined by the U.S. Census Bureau.

It is assumed that each job in a specific type of business in a state is supported by some amount of business receipts and that each dollar of wages and salaries is similarly supported by some dollar volume of business receipts. The ratios of employment to business receipts are computed for each industry in each state. These ratios are then multiplied by the total amount of business receipts generated by traveler spending in a particular type of business to obtain the measures of travel generated employment and payroll of each type of business in each state. For example, the ratio of employees to business receipts in-state commercial lodging establishments is multiplied by travel generated business receipts of these establishments to obtain traveler generated employment in commercial lodging. A similar process is used for the payroll estimates. The total sales, payroll and employment data of each travel related industry (by SIC and NAICS) are

provided by and collected from state, local and federal governments, such as the Bureau of Labor Statistics, the Bureau of Economic Analysis, Census Bureau and The Bureau of Transportation Statistics.

Estimates of Tax Revenues

The Fiscal Impact Component of the TEIM is used to estimate traveler generated tax revenues of federal, state and local governments. The yield of each type of tax is related to the best measure of the relevant tax base available for each state consistent with the output of the Economic Impact Component. The ratios of yield to base for each type of tax in each state are then applied to the appropriate primary level output to obtain estimates of tax receipts generated by travel. For example, the ratio of Massachusetts State personal income tax collections to payroll in the state is applied to total travel generated payroll to obtain the estimate of state personal income tax receipts attributable to traveler spending in Massachusetts.

Estimates for Counties and Local Areas

Local area travel impact estimates are derived by distributing the state estimates to the area using proper proportions of each related category in the area. The proportions of a local area are calculated based on a set of data collected from federal, state and local governments and private organizations. The data can be gathered at the zip-code level. Consumer survey data is not used in local impact estimates due to the issue of small sample size.

The data used to estimate the local area shares includes sales, employment, payroll and taxes for all travel-related industry categories. Local data provided by states such as sales/tax receipts, employment and wages, attraction attendances, etc. are critical inputs. County and local sales, establishments, employment and payroll data derived from Economic Census, County Business Patterns and the Quarterly Census of Employment and Wages (QCEW) are also used in the model.

Limitations of the Study

This study is designed to indicate the impact of U.S. traveler expenditures on employment, payroll, business receipts and tax revenue in each of the states. These impact estimates reflect the limitations inherent in the definition of travel expenditures. Two important classes of travel-related expenses have not been estimated due to various reasons. Consumers purchase certain goods and services in anticipation of a trip away from home. These include sports equipment (tennis racquet, skis, scuba gear, etc.), travel books and guides, and services such as language lessons and lessons for participatory sports (tennis, skiing, underwater diving, etc.). The magnitude of these purchases in preparation for a trip cannot be quantified due to lack of sound, relevant data.

The second type of spending not covered due to lack of sufficient data is the purchase of major consumer durables generally related to outdoor recreation on trips. Further research is required in this area to determine to what extent pre-trip spending on consumer durable products can justifiably be included within a travel economic impact study.

Estimates of Travel Expenditure

- Travel spending in category *i* = level of the travel activity *i* *per unit cost of the activity *i*
  Example: Spending on hotel rooms = nights stayed in hotel *average hotel room rate
- Total Travel Spending = ∑ Travel Spending in category *i , i=1,2,3.....18*

Estimates of Business Receipts, Payroll and Employment

For Category *i*

- Travel business receipts = estimated travel spending – (sales and excise taxes)
- Travel-generated payroll
  = Total payroll of the industry / total sales of the industry *travel business receipts
- Travel-generated employment
  = Total employment of the industry / total payroll of the industry *travel-generated payroll
- Total business receipts, payroll and employment are equal to the sum of all categories of each measurement respectively.

Estimates of Tax Revenues

The types of tax revenue included in the estimations:

- Retail sales and excise taxes
  For each travel related industry:
  Sales tax or excise tax revenue =
  (tax rate (federal, state and local)) *estimated travel spending of the category
- Individual income tax
  For each travel related industry:
  Travel-generated personal income tax revenue =
  (total state PI tax collection / total state PI) *estimated travel-generated personal income
- Corporate income tax and property tax are estimated in the same way.
- Total tax receipts for the federal, state and local government are equal to the sum of all kinds of taxes of all industries.

Estimates of Travel Economic Impact of counties (CTEIM)

- County share = measurement of the county / sum of all counties for the same measurement.
- Travel Impact on the county = county share *the state total (estimated by TEIM).

Appendix B: Glossary of Terms – TEIM

Automobile Transportation Expenditure. This category includes a prorated share of the fixed costs of owning an automobile, truck, camper, or other recreational vehicles, such as insurance, license fees, tax, and depreciation costs. Also included are the variable costs of operating an automobile, truck, camper, or other recreational vehicles on a trip, such as gasoline, oil, tires and repairs. The costs of renting an automobile or other motor vehicle are included in this category as well.

Entertainment/Recreation Expenditure. Traveler spending on recreation facility user fees, admissions at amusement parks and attractions, attendance at nightclubs, movies, legitimate shows, sports events and other forms of entertainment and recreation while traveling.

Food Expenditure. Traveler spending in commercial eating facilities and grocery stores or carry-outs, as well as on food purchased for off-premise consumption.

Incidental Purchase Expenditure. Traveler spending on retail trade purchases including gifts for others, medicine, cosmetics, clothing, personal services, souvenirs and other items of this nature.

Lodging Expenditure. Traveler spending on hotels and motels, B&Bs, campgrounds and trailer parks, rental of vacation homes and other types of lodging.

Public Transportation Expenditures. This includes traveler spending on air, bus, rail and boat/ship transportation, and taxicab or limousine service between airports and central cities.

Travel-generated Tax Receipts. Those federal, state and local tax revenues attributable to travel in a defined area. For a given state locality, all or some of the taxes may apply. "Local" includes county, city or municipality, and township units of government actually collecting the receipts and not the level that may end up receiving it through intergovernmental transfers.

Federal. These receipts include corporate income taxes, individual income taxes, employment taxes, gasoline excise taxes and airline ticket taxes.

State. These receipts include corporate income taxes, individual income taxes, sales and gross receipts taxes and excise taxes.

Local. These include county and city receipts from individual and corporate income taxes, sales, excise and gross receipts taxes and property taxes.

Appendix C: Travel-Related Industry by NAICS

Travel Industry Categories: With the transition to NAICS, the U.S. Travel Association has adjusted its selection of the travel-related business types using the new NAICS codes and brought its travel economic research into conformity with NAICS. For measurement purposes, U.S. Travel Association's Travel Economic Impact Model tracks business activity in seven (7) major travel-related industry groups. The industry groups and subcategories used in the model are outlined below, followed by a detailed table of NAICS Codes. The share of travel in each of listed industries will depend on travel spending estimates for the related categories and are different from industries and areas.

Automobile Transportation: Gasoline service stations, passenger car rental, motor vehicle/parts dealers, automotive repairs and maintenance.

Entertainment/Recreation Industry: Entertainment, art and recreation industry.

Foodservice Industry: Eating and drinking places and grocery stores.

Retail Trade Industry: General merchandise group stores and miscellaneous retail stores, including gift and souvenir shops, and other retail stores.

Lodging Industry: This industry includes hotels, motels, and motor hotels, camps and trailer parks.

Public Transportation Industry: Air transportation, taxicab companies, interurban & rural bus transportation, railroad passenger transportation (Amtrak) and water passenger transportation. Also is the "dummy" industry of "other transportation."

Travel Arrangement Industry: This includes travel agencies, tour operators, and other travel arrangement & reservation services.

TRAVEL-RELATED INDUSTRY BY NAICS

Accommodations
7211 Traveler Accommodations
7212 Recreational Vehicle Parks & Campgrounds

Auto Transportation
532111 Passenger Car Rental
447 Gasoline Stations
4411 Automobile Dealers
4412 Other Motor Vehicle Dealers
4413 Automotive Parts, Accessories and Tire Stores
8111 Automotive Repair and Maintenance

Entertainment and Recreation
711 Performing Arts, Spectator Sports & Related Industries
712 Museums, Historical Sites & Similar Institutions
713 Amusement, Gambling & Recreation

Food
7221 Full service Restaurants
7222 Limited Service Eating Places
7224 Drinking Places
445 Food and Beverage stores

Public Transportation
481 Passenger Air Transportation
4881 Airport Support Activities
4821 Rail Transportation
4852 Interurban and Rural Bus Transportation
4853 Taxi & Limousine Services
485510 Charter Bus
483112 Deep Sea Passenger Transportation
483114 Coastal and Great Lakes Passenger Transportation
483212 Inland Water Passenger Transportation
487 Scenic & Sightseeing Transportation

Retail
451 Sporting Goods, Hobby, Book, and Music Stores
452 General Merchandise Stores
453 Miscellaneous Store Retailers
443 Electronics and Appliance Stores
444 Building Material and Garden Equipment and Supplies Dealers
446 Health and Personal Care Stores
448 Clothing and Clothing Accessories Stores

Travel Arrangement
5615 Travel Arrangement & Reservation Services (includes travel agencies and tour operators

Appendix D: Sources of Data

This appendix presents the sources of data used in this report.

Organizations

Airlines for America, (formerly known as Air Transport Association of America)
American Automobile Association
Amtrak
American Society of Travel Agents
Bureau of Census, U.S. Department of Commerce
Bureau of Economic Analysis, U.S. Department of Commerce
Bureau of Labor Statistics, U.S. Department of Labor
Bureau of Transportation Statistics, U.S. Department of Commerce
Federal Aviation Administration, U.S. Department of Transportation
Federal Highway Administration, U.S. Department of Transportation
National Park Service
Massachusetts Office of Travel and Tourism
Massachusetts Department of Revenue
Smith Travel Research
OTTI/International Trade Administration, U.S. Department of Commerce
U.S. Travel Association

Appendix E: RIMS II

REGIONAL INPUT-OUTPUT MODELING SYSTEM

A BRIEF DESCRIPTION

Regional Economic Analysis Division
Bureau of Economic Analysis
U.S. Department of Commerce
Washington, D.C. 20230
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RIMS II

Many types of public sector and private sector decisions require an evaluation of probable regional effects. For example, federal requirements for environmental impact statements and the urban impact of federal policies necessitate regional impact analyses. A growing concern, therefore, about the effects of public and private decisions has created a demand for regional economic models.

As a result of this demand, economic impact models have been developed for many states and regions. These models vary considerably in terms of structure, reliability, sectoral and geographical detail, flexibility in application, and cost of development and use. In general, the models that provide the most reliable and industrially-detailed secondary impact estimates are the most expensive to construct, while the less costly models that can be used in numerous small-area studies often provide less accurate estimates.

In response to the growing need for improved techniques for regional impact analysis, the Regional Economic Analysis Division of the Bureau of Economic Analysis (BEA) developed the Regional Industrial Multiplier System (RIMS) in the mid-1970's. RIMS was designed to estimate input-output type multipliers for use in estimating the secondary regional impacts of public and private economic development policies. RIMS was capable of estimating multipliers for any region composed of one or more contiguous counties and for any of the 478 industrial sectors in the 1967 BEA national input-output (I-O) table. A significant improvement over the more summary measures often used in regional impact analysis, RIMS was capable of providing reliable multiplier estimates without the high cost of gathering survey data.

The Regional Input-Output Modeling System (RIMS II) is a major revision of RIMS. The basic differences between RIMS II and RIMS are the use of more recent national I-O tables (1987), the use of more detailed and more current data for regionalizing the national I-O tables, and greater flexibility in the derivation of regional impact estimates through the use of a matrix inversion technique that provides industrially-disaggregated impacts. RIMS II developmental research is focused currently on estimating regional transaction tables, and comparing RIMS II estimates of state-specific imports and exports with survey-based estimates from the Census Bureau's Commodity Transportation Survey. RIMS II is also being adapted to analyze the regional and industrial impacts of defense procurement.

RIMS II METHODOLOGY

In order to estimate impacts such as those presented above, RIMS II uses the BEA national I-O tables that show the input and output structure of 500 industries. Since firms in all national industries are not found in each region, some direct requirements that are not produced in a study region are identified, using Bureau of Economic Analysis (BEA) 4-digit Standard Industrial Classification (SIC) county earnings data. The earnings data are used as proxies for the industry-specific input and output data which are seldom available at the small-area level. Using the same earning data, the resulting regional I-O table then can be aggregated to the level of industrial detail appropriate for the impact study. More specifically, the RIMS II approach can be viewed as a three-step process. In the first step, the national I-O matrix is made region-specific by using corresponding 4-digit SIC location quotients (LQ's). The LQ's are used to estimate the extent to which requirements are supplied by firms within the region. For this purpose, RIMS II employs LQ's based on two types of data. According to this mixed- LQ Approch, BEA county personal income data, by place of residence, are used for the calculation of LQ's in the service sectors, while BEA earnings data, by place of work, are used for the LQ's in the nonservice sectors.
The second step involves estimations of the household row and the household column of the matrix. The household-row coefficients are estimated based on value- added gross-output ratios from the national I-O table and introduced into each industry's coefficient column. A household column is constructed, based on national consumption and savings rate data and national and regional tax rate data.

The last step in the RIMS II estimating procedure is to calculate the multipliers. Since it is most often necessary to trace the impact of changes in final demand on numerous individual directly-and indirectly-affected industries, RIMS II applications employ the Leontief inversion approach for obtaining multipliers. This inversion process produces output and earnings multipliers for all additionally affected industries.

ACCURACY OF RIMS II

Empirical test of the accuracy of RIMS II multipliers indicates that RIMS II yields estimates that are not substantially different from those generated by regional I-O models based on the costly gathering of survey data. For example, a comparison of 224 industry-specific multipliers from survey based tables for Illinois, Washington, and West Virginia indicate that the RIMS II average multipliers overestimate the average multipliers from the survey based tables by approximately 5 percent, and, for the majority of individual industry-specific multipliers is less than 10 percent. In addition, RIMS II and survey multipliers show a statistically-similar distribution of affected industries.

ADVANTAGES OF RIMS II

There are numerous advantages to RIMS II. First, it is possible to provide estimates of economic impact without building a complete survey I-O model for each region under study, since RIMS II produces multipliers that are derived from secondary data sources. Second, the RIMS II multipliers are derived from a limited number of secondary data sources, thus eliminating the costs associated with the compilation of data from a wide variety of these sources. Third, because of the disaggregated sectoring plan employed by RIMS II, analysis may be performed at a detailed industrial level, thereby avoiding aggregation errors that often occur when different industries are combined. Fourth, the RIMS II multipliers are based on a consistent set of procedures across areas, thus making comparisons among areas more meaningful than would be the case if the results were obtained from incompatible impact models designed only for an individual area. Fifth, the multipliers can be updated to reflect the most recent local area earning and personal income data.

The industrial output and personal earnings impacts estimated by RIMS II can be crucial for estimating effects not directly specified by RIMS II itself. For example, the estimation of regional, fiscal, labor migration and environmental effects often depends on the estimation of the regional output and earnings impact of the initial stimulus. Since many of these important effects are often best analyzed on a case-by-case basis, one of the major advantages of using RIMS II is that valuable research resources can be spent on the analysis of these effects, rather than on the construction of an impact model. Therefore, when using RIMS II, a cost-effective impact study might devote most of its research budget to specifying initial impacts in industry specific detail, and analyzing the implications for other important aspects of regional economic activity of the RIMS II estimates impacts.

This overview briefly describes RIMS II multiplier, the multiplier estimation procedures, and some of the advantages and uses for RIMS II. For additional information, see “Regional Multipliers,” a user handbook for the Regional Input-Output Modeling System (RIMS II), third edition. This handbook is produced by the U.S. Department of Commerce and available from the U.S. Government Printing Office.